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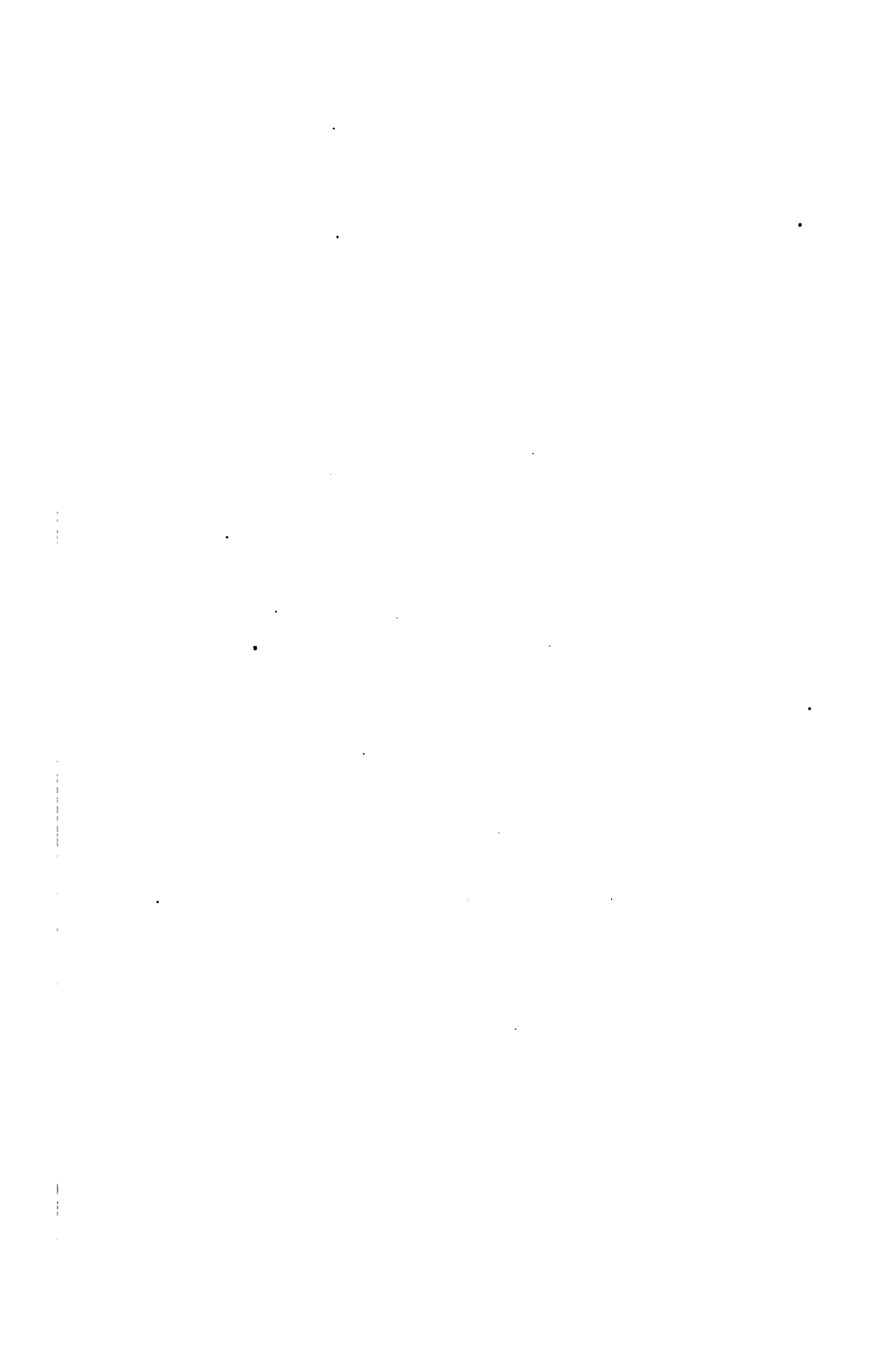
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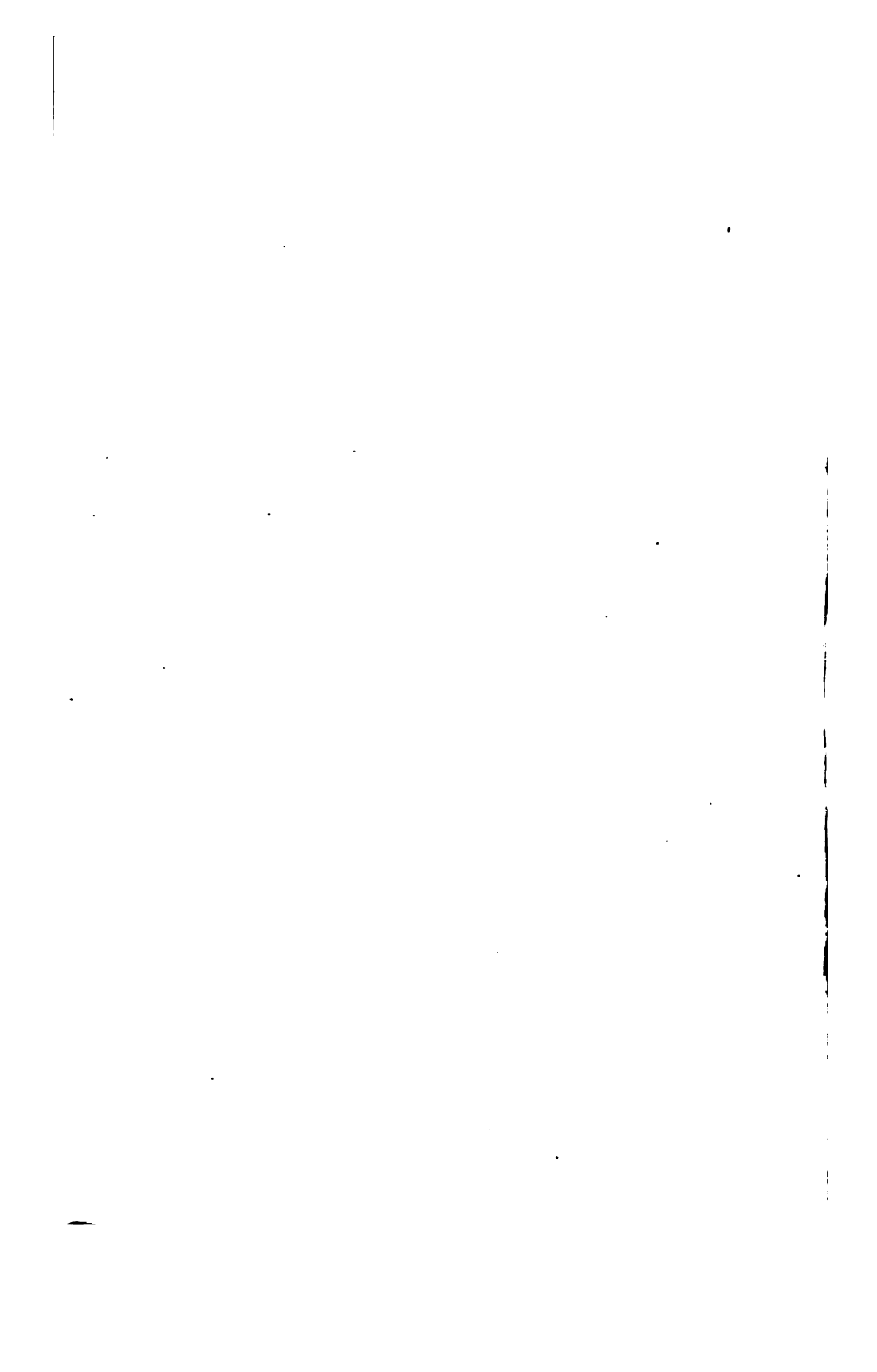
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MEMOIR
OF THE
LIFE AND MEDICAL OPINIONS

OF

JOHN ARMSTRONG, M.D.

FORMERLY PHYSICIAN TO THE FEVER INSTITUTION OF LONDON ;
AUTHOR OF " PRACTICAL ILLUSTRATIONS OF TYPHUS AND SCARLET FEVER ; "

&c. &c.

TO WHICH IS ADDED

AN INQUIRY INTO THE FACTS CONNECTED WITH
THOSE FORMS OF FEVER ATTRIBUTED TO
MALARIA OR MARSH EFFLUVIUM.

BY

FRANCIS BOOTT, M.D.

SECRETARY OF THE LINNEAN SOCIETY ;
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CORRESPONDING MEMBER OF THE MEDICAL AND PHYSICAL SOCIETY
OF CALCUTTA.

IN TWO VOLUMES.

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TO
JAMES JACKSON, M.D.,

PROFESSOR OF THE THEORY AND PRACTICE OF MEDICINE IN HARVARD
UNIVERSITY, N. A.,

*Whose qualities of mind and heart testified all their
truth and influence over others in the character of his
Son, the recollection of whose intellectual and moral
excellence now compensates for the affliction which
his early death occasioned to a large circle of friends
in Europe and America,*

THIS VOLUME IS DEDICATED

BY HIS GRATEFUL FRIEND,

F. BOOTT.

24, Gower Street, Bedford Square,
June 15th, 1834.



P R E F A C E.

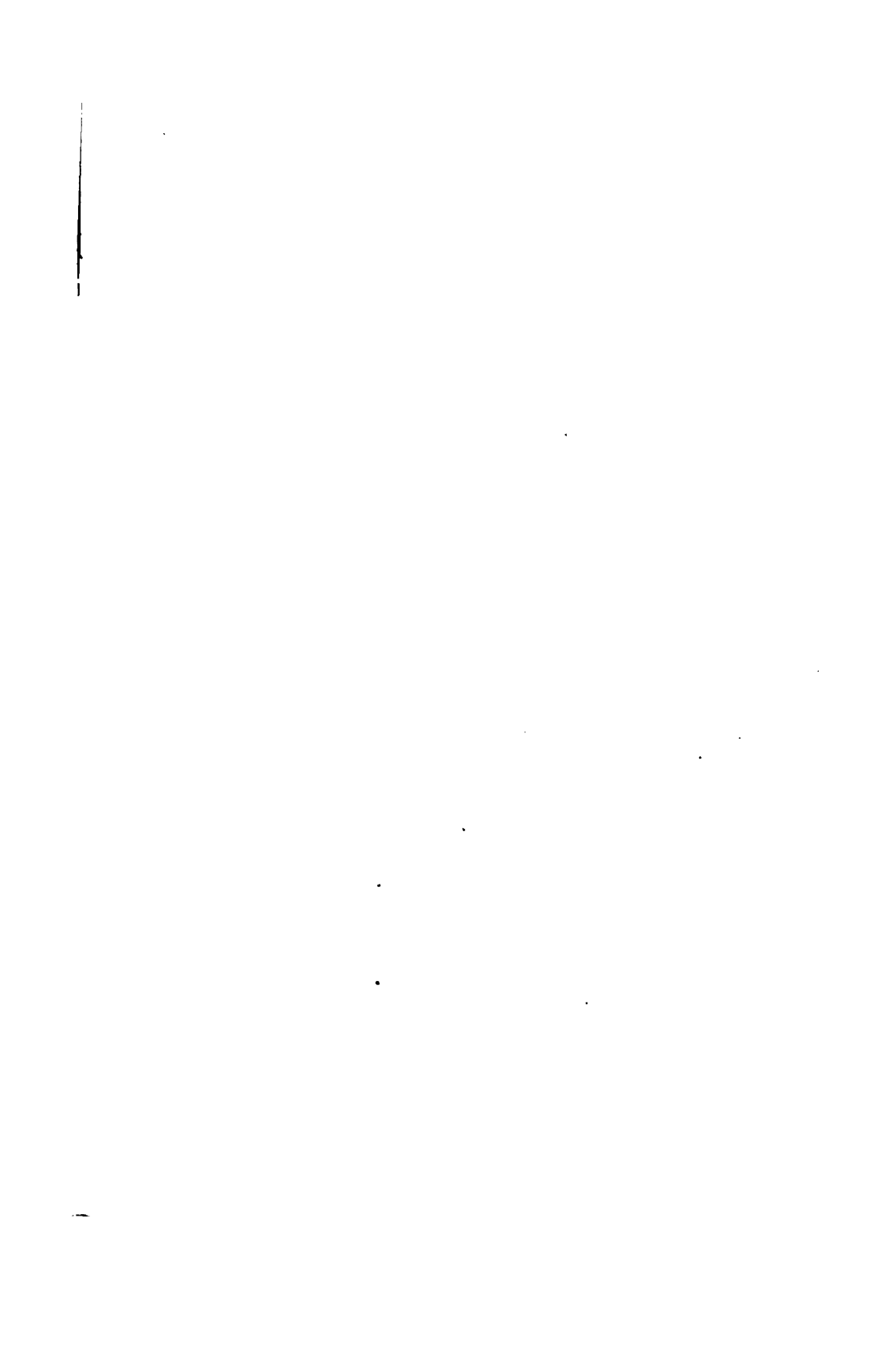
IN this volume I have entered largely into the consideration of Plague, as it has appeared in Egypt, Syria, Holland, France, and London, as, in an inquiry into those diseases which have been referred to malaria, it was impossible to omit the examination of one which, though known by a specific appellation, has no characteristics to distinguish it from Marsh fever in the sense I have applied to it. I have shown by facts that Plague to all appearance obeys the laws which govern the other forms of Malignant fever, and that in Egypt and Syria it is often of a periodical type, which it does not wholly lose in the more northern latitudes to which I have traced it.

I have offered a view of Fever, and of the opinions of some of the highest authorities in Europe respecting it, tracing it from Italy and the Mediterranean, through Paris to Great Britain; and the result has been to confirm me in the belief that mean temperature influences its type.

I have made large use of the celebrated work of Louis, which abounds in so many important details on the Typhus of Paris, a disease which in many respects perhaps will be found to differ in character from the common endemic fever of this country, though certainly the same in nature. His work, by giving a definite character to Typhus, will enable medical men to determine whether the fatal Intermittents and Remittents in hot climates ever approximate to it by exhibiting its essential lesion. If the pernicious fever of Italy, and the Remittents of either India, should show that the glands of Peyer are diseased in these diseases, it will afford an additional argument in favour of the natural affinity between Ague and Continued fever: and if the causes of the first are found to be the same as those of the last form of fever, only modified in their effects by differences of temperature, a strong presumption against a contagion *sui generis* in Typhus will be a legitimate consequence.

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FEVERS OF EUROPE.

CHAPTER I.

PLAGUE.

THE inquiry into those diseases of North America which are attributable to malaria, as an essential remote cause, has been necessarily extended over a wide range of territory ; and as no just comparison can be drawn between them and the diseases of any single kingdom or country of Europe, it will be necessary to take a survey of the fevers of the whole European Continent.

In turning to Europe, the first malady which arrests the attention is Plague, to which nothing precisely analogous has been presented in America. I am not aware of any *epidemic*, in the medical histories of that Continent, which has been considered identical with Plague, though, from the variable character of Marsh fever, individual cases may have occurred bearing some resemblances to it. The embarrassment attending the comparison arises from the impossibility of fixing upon a determinate character for the Plague itself. If, as I think can be shown, it is a malarious disease, depending on those

inscrutable causes which give an epidemic prevalence and intensity to specific fever, then a general resemblance might be shown to exist between it and particular cases in America.

As I have sufficiently enlarged upon Yellow fever, a modification depending on a high temperature acting upon the unseasoned constitution, I shall confine my attention to Plague and Typhus, and those common forms of fever which are endemic in the different latitudes of Europe.

The uncertainty which has so long prevailed as to the nature and causes of Plague, is more completely removed by considering it a malarious fever than as a disease *sui generis*, depending on the accidental introduction of a foreign contagion, and a state of atmosphere favouring its reception. The tendency of later inquiry has been to associate it with the indigenous diseases of those countries where it prevails, though many distinguished men still adhere to the idea, that it is a peculiar disease, propagated, like Small-pox, from person to person, by a specific contagion. The same belief was for a long time entertained of the origin and diffusion of Yellow fever; but repeated observation has proved its spontaneous origin, and its incommunicability in a pure atmosphere.

It is impossible to turn to any elaborate treatise on the Plague without observing the confusion that exists respecting it. Sydenham, in speaking of it, has displayed his usual sagacity; and though it is to be regretted he is so concise, his observations contain much that is invaluable, coming from so eminent an authority.

Dr. Armstrong remarks, "It is a common opinion, that there is a close analogy between Typhus and Plague; and as the first has been accounted by most modern writers an asthenic disorder, so the last has been deemed of a similar but more severe character. The prevalence of this opinion has brought depletion into disrepute, and introduced an undecided, and merely palliative treatment in the Plague. An attentive comparison of the most authentic histories of this complaint with the phenomena of Typhus, has certainly convinced me that a close analogy actually does exist between the two maladies; and having endeavoured to demonstrate, from personal experience, the fallacy of the scholastic notions as to the nature of Typhus, I shall attempt to show that Plague is not a disease of real debility, but one of excitement and of congestion."

In Sir A. Brooke Faulkner's paper on the Plague of Malta, published in 1814, in the 10th volume of the *Edinburgh Medical and Surgical Journal*, to which Dr. Armstrong refers, it is said, "that not one single remedy has been stumbled upon in which any certain efficacy was discovered to reside; and that the practice in Plague is still at the present day little more than an empirical routine."

If there be any truth in the idea that Plague is analogous to Typhus, it will be admitted that there is no reasonable foundation for the hope of any "*single remedy*" ever being discovered which can arrest its progress; but confident expectations may be entertained, that by applying the doctrine of congestion and inflammation to its most formidable varieties, and the principles of treatment applicable

to these conditions in their different stages and degrees, a proportionate amount of success in the results of future practice may be obtained, and that the charge of empiricism will no longer be deserved.

There are few, however, who will dissent from the opinion of the venerable Sir Gilbert Blane, that "it seems hardly to admit of a doubt, there are particular instances of disease, in their own nature *determinedly fatal*, in which the animal functions are from the first so deranged, that there are no possible means in nature capable of controlling that series of morbid motions which lead to dissolution. Of this kind appear to be the greatest number of cases of the Plague; of the malignant Small-pox; and particularly Yellow fever." This very proneness to fatality in the Plague and Yellow fever might be used as a plausible argument, that they, like the malignant Small-pox, are not diseases *sui generis*, but the most aggravated forms of milder modifications of fever; a fact which is confirmed by the relief experienced, in some cases of Plague, by a change of situation, as we shall see occurred in Egypt, under the observations of Assalini, exactly conformable to the effects produced in Yellow fever, on the testimony of Lind, and in Typhus, on that of Jackson.

The views of Dr. Armstrong with respect to the general character of Marsh fever, if applied to Plague, would remove much of the uncertainty which has prevailed as to the pathological conditions of its various forms, and would lead to the adoption of a more rational treatment; and to show that these views were applicable to it, was the motive which

induced him to make it the subject of a separate essay. He was of opinion that it was a very aggravated form of Typhus, arising, like it, originally from malaria, characterized by the same general conditions, and to be treated on the same principles ; that its intensity depended upon those occasional differences in the concentration of the remote cause, and upon that variable state of predisposition which is connected with seasons, habits and the changeable circumstances of life ; that while, in every epidemic of Plague, cases were observed not distinguishable from the Typhus of this country, so here, in severe visitations of the epidemic prevalence of the last, instances were occasionally met with which approached in character to the true Plague. In those countries where Plague is frequently epidemic, it is not surprising, judging from the analogy of Yellow fever, that it should assume a variable character. In this country, Typhus has a narrower range, because there are no circumstances favouring its most aggravated forms, so that it is only at long intervals, and in individual cases, that it assumes a malignancy like that of Plague. In the South of Europe, Asia and Africa, these circumstances more commonly occur, and every gradation of effect is met with. "The Plague," says Sir A. B. Faulkner, "above every other distemper with which I am acquainted, either by reading or experience, is one of the most irregular type, modified in its symptoms and appearances to a degree surpassing all belief, and every attempt to explain by difference of constitution, age, temperament, manner of life, and other peculiarities in its victims. The cha-

racter of the concomitant fever becomes extremely irregular, assuming every shade of variety, from Synocha down to the lowest degree of Typhus, and in some instances having accessions of rigor not unlike an irregular species of Intermittent."

It has been asserted that fever forms no essential part of its character, because the phænomena usually associated with the open development of excitement are not present in all cases; and some of the highest authorities equally contend, that the glandular swellings and carbuncles are by no means constant and inseparable from it. Dr. Bancroft, however, while he allows that fever, properly so called, does not constitute the disease, and that it is not perceptible, even as a symptom, in some cases, is of opinion that it must come into its definition; for if we were to reject, he says, all the symptoms that are occasionally absent, we should have none remaining to denote the disease. He therefore summarily concludes, that fever, though of no particular form or species, is to be admitted in the definition; and that this indefinite fever, with glandular swellings, exanthemata and carbuncles, may serve generally to designate Plague, if the disease be accompanied by that specific contagion which is its cause, and without which it cannot exist.

The doctrine of contagion fettered the mind of Bancroft, and prevented his taking those enlarged views with regard to Typhus and Plague, which he has so forcibly applied to Yellow fever; and though the majority of authors may be on his side with respect to the source and nature of the two former diseases, we have seen, on the subject of the latter,

that the number and weight of medical authorities afforded no true indication of its real character; for since the year 1793, the opinion of its contagious property has been generally abandoned, and doubts have in consequence arisen as to the origin and mode of propagation of Typhus and Plague.

The existence of an intermitting and remitting type of fever in Plague, which was observed by Price and Sir James M'Gregor in Egypt, is attempted to be explained by Bancroft on the supposition of the joint action of malaria and the contagion of Plague, just as Chisholm accounted for his Bulam fever by associating malaria with the contagion of Typhus. This idea of two distinct causes cooperating to produce a compound disease arose among the advocates of contagion, who were otherwise unable to explain the occurrence of intermitting fever in epidemics, which ultimately assumes a continued typhoid character. Pringle endeavoured on this supposition to explain the Hungarian fever of the sixteenth century, from the belief that marsh exhalations alone could give rise to the periodical types of fever, and that the malignant continued form was the exclusive progeny of human effluvia.

This opinion is subsequent to the time of Sydenham and of Lancisi. The former refers his Continued fever to the same atmospherical influences as produced its preceding Intermittents; and the latter traced the different grades of fever, from the mildest intermittent to the most acute continued form, to the same marsh exhalation. As fever in its various forms has in modern times been more closely ob-

served, especially in America, which presents so many of its leading modifications, the idea of human effluvia being essential to the production of a typhoid disease was early held to be questionable ; and any one who will candidly consider the descriptions of fever throughout North America, which I have given in the preceding volume, observing its localities, will, I think, be obliged to abandon the idea of typhoid fevers arising from that exclusive cause which, since the time of Pringle and Huxham, has so generally been ascribed to them in this country, and will be compelled to admit that, like the periodical types of fever, they are equally the product of local contaminations of air, which occasion fever of different forms, according to the variable concentration of the remote cause, and those states of predisposition which temperature and other circumstances occasion.

The affection of the glandular system, though considered as pathognomonic of Plague, is not universal in that disease, nor confined exclusively to it. We have occasional evidence, not only of buboes and carbuncles, but of exanthemata in Typhus and Yellow fever ; and, however difficult it may be to account for the comparative infrequency of the two former affections in the latter diseases, their occasional occurrence is a subject of important consideration, as adding some weight to the idea of the three diseases being mutually allied. It is only in the worst cases of Typhus that these more frequent symptoms of Plague make their appearance, which would lead to the inference, that the one disease is a slighter modification of the other ; an im-

pression strengthened by the character of the fever recorded by Sydenham as having preceded and followed the Plague of London in 1665. It is impossible to account for the disappearance of Plague in this country on the idea that it was formerly imported into it, considering how frequently those morbid states of atmosphere must have occurred within the last hundred and fifty years to favour the reception and diffusion of the contagious principle, and the greater intercourse which the multiplied commercial dealings of modern times have established with the Levant; and though it may be equally difficult to explain why endemic causes, if they ever gave origin to Plague in England, have not produced it since 1679, yet some portion of that difficulty is removed, on the supposition that Typhus is the same disease modified by circumstances favouring the general condition of the people, and only appearing occasionally in severe epidemics with those symptoms which more particularly belong to Plague.

I shall examine some of the facts connected with Plague, and see how far it can reasonably be considered a Marsh fever. By this term I mean an intermittent, remittent, continued or mixed form of fever, arising from malaria, or contaminations of air, aggravated in their effects by atmospherical influences; and considered under all its modifications as essentially one disease, variable in character, especially in different seasons, climates and situations; desultory in the locality of its prevalence; generally obedient to particular seasons, its worst forms arising more or less gradually out

of the milder, or passing into them ; generally attended with something unusual in the character of the year of its greatest virulence ; and falling most severely on the lower classes of society, whose situation, habits and circumstances favour its early development and diffusion among them.

I shall begin with the Plague of London in 1665, as we have the high authority of Sydenham to guide us in our investigation of the circumstances attending it. But to give a just idea of its nature, it will be necessary to allude to the epidemic constitutions of preceding years, to show that the Plague arose gradually out of the usual endemic forms of fever, which disappeared before its rise, and did not return for some years after its decline.

Abundant evidence is derived from the observations of Sydenham of the fact so much insisted upon by Dr. Armstrong as proving the nature of the remote cause of all the forms of Marsh fever, viz. that they pass and repass into each other. In speaking of the Intermittents of 1661 to 1664, he says, that when they are epidemic in autumn, it is difficult to distinguish them, because they are accompanied by a continued fever, and for some time nothing more than a remission can be discovered, till by degrees they perfectly intermit. And in speaking of the Tertians of 1678, he says, though they sometimes began with chilliness and shivering, succeeded by heat and sweating, and ended in a perfect intermission, yet they would not keep this order after the third or fourth fit, for afterwards the fever became so violent that only a remission happened in place of an intermission ; and approaching

every day nearer to the species of continued fevers, it seized the head and proved fatal to many*.

As malaria is almost universally considered the essential cause of *Intermittents*, it is allowable to infer, as these pass occasionally into the remittent and continued form, that it sometimes gives rise to the continued type at once, especially as we find, in the progress of the disease, that it often ends as an intermittent; but if this change does not occur, and the fever begins and ends in a continued form, provided it bears a general resemblance to those which do eventually intermit, we are justified, from the agreement in symptoms and pathological conditions, to refer them both to one cause, but to consider that cause modified in its effects, either from some change in it, or from some circumstance connected with predisposition, or a peculiar state of the atmosphere.

We have innumerable proofs that *Intermittents* and *Remittents* vary much in character from mild to malignant; and the same is true of continued fevers, however difficult it may be to account for the fact, considering them all to depend on one remote cause. It is probably connected with a variable concentration in the cause itself, and in a state of atmosphere more or less favourable to its effects. That intensity of cause, apt predisposition, and an aggravation of the general state of atmosphere, are all concerned in the production of the worst forms of fever is proved by their more frequent occurrence, their more extensive prevalence and fatality in cities; a fact which has been established from

* Sydenham's Works, by Swan, pp. 55, 308.

the earliest ages in every country, and which we have seen confirmed by the frequency and mortality of Yellow fever on the sea-coast of North America compared with the interior. The same is true of the Plague of London in 1665 ; for it arose progressively out of the usual forms of endemic disease, which had gradually increased in severity, till the milder ones were lost in this malignant scourge, and in the intermediate grades which preceded and followed it. I shall take a rapid view of the epidemics described by Sydenham from 1661 to 1689, that it may be seen how far the facts he details and his own opinions justify the conclusion that they arose out of one remote cause.

We have no data to determine how long Intermittents had prevailed in London previous to the year 1661 ; but that they were then rife is shown by Tertians appearing as early as July, and proving extremely violent in August ; for Sydenham remarks, that when they do not prove epidemic they seldom commence till August or September. They went off on the approach of winter, and were followed by a continued fever, "*intermittentium quasi compendium quoddam.*" In the Reflections on the Bills of Mortality, published in 1665, it would appear that Agues fell off remarkably in number from 1656 to 1660, being then as 1147 to 9819 from 1652 to 1656 ; and it also appears that *bloody flux*, *scouring* and *flux* were more than doubled in 1661, being 571 to 251 in 1660, as if the same cause which gave aggravation to the fevers mentioned by Sydenham in 1661 produced a corresponding effect on Dysentery, at least as to prevalence. In 1662,

Tertians, but more commonly Quartans, returned in autumn with the Continued fever, the last increasing as the former declined, and raging violently till the spring, when vernal Intermittents succeeded; and this order of succession was maintained till 1664. The winter of 1664-65 was unusually cold, the frost continuing till the end of March, when Peripneumonies, Pleurisies and an aggravated Continued fever arose. Towards the middle of the year the Plague appeared, and came to its height about the autumnal equinox. It then abated, seizing few in winter, and went off in the spring of 1666, though the Continued fever which preceded it prevailed that year, but less epidemically, and lasted till the spring of 1667: for the fevers which prevail for a year or two after a severe Plague are generally pestilential; and though some have not the genuine signs of the Plague, yet they are much of the same nature, and require the like treatment.

At the approach of the vernal equinox of this year a new kind of fever arose, remained through the winter, declined in the spring of 1668, and finally ceased in August 1669. With this fever, which Sydenham calls the *variolous*, a flux prevailed, which so nearly resembled the reigning fever, that he considered it the same disease turned inwards and fixed upon the bowels. In the beginning of August 1669, Cholera, the Dry Gripes and Dysentery began to rage; the first scarcely extended into September, but the second continued to the end of autumn, vanished on the approach of winter, and appeared no more in the three subsequent years, whereas the Dysentery became more epidemic. Be-

tween it and the Dry Gripes a *dysenteric* fever arose and attended both diseases, and when on the approach of winter the Dysentery vanished for a time, this fever raged more violently. In July 1670 it again became epidemic: the Dysentery returned in August, but, being checked by the cold of winter, left the fever to prevail throughout that season. In February 1671, Tertian Intermitents returned, after an absence of seven years, and the dysenteric fever became less frequent; but the former went off at the summer solstice, and in July the latter resumed the station it held in the preceding years. Towards the decline of autumn, the Dysentery returned a third time, but less severely, and vanishing on the approach of cold weather, left the fever as usual to prevail through the winter: and the same succession took place in 1672.

In July 1673 a new kind of fever prevailed, but not very epidemically, through the autumn and winter, the Dysentery, which had preceded it, continuing to attack a few. This fever continued through 1674, committed great devastation in July 1675, but from the beginning of autumn appeared sometimes with the symptoms of Dysentery, Diarrhœa, or stupor, till the end of October, when the weather, which had been as warm as summer, changed suddenly to cold and moist, whence Catarrhs and Coughs became universal. The fever usually succeeded these Coughs, and hence became more epidemic, and likewise varied some of its symptoms, for it now chiefly seized the chest, whence peripneumonic and pleuritic symptoms attended it. These Catarrhs continued till the end of

November, when they suddenly abated, leaving the fever the same as it was before their occurrence. In 1676 the diseases of the three preceding years continued, but were milder and not so epidemic, notwithstanding the great heat and cold of the summer and winter. At the close of summer the Cholera raged more severely than was ever known. In the following year the failing health of Sydenham compelled him to leave town, to which he returned in the autumn, when his friends informed him that a few Intermittents, chiefly contracted in the country, remained here and there. These again became epidemic in 1678, having been in a manner extinct in town during the thirteen preceding years, except only that they seized a few sporadically, or were brought from the country: and though only a few arose in the spring, they prevailed so much over all other diseases at the end of summer and beginning of autumn as to be the sole epidemics, declining in winter and reappearing at the season peculiar to them. Though Quartans were more frequent formerly, yet now Tertians or Quotidians, unless the latter be termed Double Tertians, were most common; and though they sometimes began with rigors, followed by heat and sweating, and ending in a perfect intermission, yet after the third or fourth fit the fever became so violent as to remit only, and approaching every day nearer to a Continued fever, seized the head and proved fatal, especially if the patient was confined to bed and used stimulants; for it is dangerous, he says, to attempt to remove Tertians and Quotidians by sudorifics when they are recent and have assumed no certain shape,

as they then approach to Continued fevers, the Intermittent, by the sweat being forced beyond the due degree, becoming continued and endangering life. In the first years of this constitution a remarkable symptom sometimes succeeded these intermittents, for the fits did not begin with chilliness and shivering followed by fever, but the patient was seized with apoplexy, which was nothing more than the effect of the fever seizing the head. In 1679 these Intermittents reappeared at the beginning of July, and proved very violent and destructive in August, but gave way in November to a very general epidemic Catarrh, which when unskilfully treated caused a fever like that which was so prevalent in the winter of 1675. Though this fever was accompanied with violent defluxions on the lungs at the beginning, yet in a month or two afterwards it appeared to be of the same kind, though unattended by a cough. It continued till the beginning of 1680, when, as the year advanced, intermittents arose, which remained without any alteration till 1685; and though milder and less epidemic in the City than they were from 1661 to 1664, yet they raged as violently in other places as they formerly did. "The present constitution," he says, "favours Intermittents so much that no Continued fever exists unless from wrong management, and the force of it must be weakened before the Continued fever of 1661 can become epidemic. That fever was no doubt the remains of Intermittents, which had prevailed for a certain course of years before, and it probably will return as soon as the present constitution abates, and will continue

for a certain term of years before the Plague arises. But throughout those years in which it shall prevail, Intermitments may at times appear, and perhaps prove epidemic for a short space. Whether bark will cure it as certainly as it usually does the reigning Intermitments, is unknown ; but if it be given in the Plague and the continued epidemics which *will regularly* follow this, the same effects may be expected from it as it produces in the Pleurisy, Peripneumony, and the like inflammatory disorders, in which it is manifestly pernicious ; and epidemics will succeed each other hereafter in the above manner, provided Nature does not deviate from the order of the last twenty-four years."

In his *Schedula Monitoria* he remarks, that the Intermitments which began in 1677 daily increased, and became epidemic, till they came to their height, and gradually decreased in 1683 and 1684, so as to appear very seldom. The winters of these years were very severe, especially that of 1683. On the breaking up of the frost in 1685, a new fever appeared, which spread over England that and the following year, but was more general in the country than in London. It lasted till 1689. At first he took it for Peripneumonia notha ; but as it continued through the summer, a season which usually terminates that disease, he concluded it was a fever belonging to a new constitution. He treated it successfully by venesection and purgatives, which either effectually removed it or brought it to intermit, when it yielded to bark. Under date of Sept. 1786, he says that he cannot tell how long this fever is to last, or whether it be some subtle be-

ginning of the Depuratory fever of 1661, which was followed by the Plague; but the circumstances which inclined him to this opinion were, that Intermittents still continued in some places; that the Continued fever sometimes ended in an Intermittent, especially in autumn; that the fever increased towards night, a little resembling the fits of Intermittents; and that persons affected with it were much subject to vomiting.

From this rapid sketch of the epidemics of Sydenham, which extend through twenty-eight years, we have similar proofs to those which the epidemics of North America furnished, that the intermittent, remittent and continued forms of fever are modifications of the same disease; for they pass and re-pass into each other, and when either is predominant they observe the same obedience to season. During the prevalence of Intermittents from 1661 to 1664, they began in July, went off at the approach of winter, and were followed by a mild Continued fever, which lasted till spring, when vernal Intermittents arose. These disappeared in May, and ended, as it were, the epidemic of the year, which commenced in July and lasted till June. In the autumn of 1662 Tertians and Quartans returned, with the Continued fever: the last, increasing as the former declined, and prevailing through the winter, yielded as usual to vernal Intermittents; and this succession was observed till 1664, the winter of which was unusually severe and long.

If we may be allowed to reason from the acknowledged source of Intermittents, from the prevalent belief that those which appear in spring are attri-

butable to the malaria of the preceding autumn, and from the fact that temperature, as it were, stamps a character upon Marsh fever, we may explain the different forms it assumed during the seasons and years of this constitution, without assigning any other causes for them than malaria and the respective temperatures of autumn, winter and spring. On this view it would appear, that in the warmth of summer malaria gave rise to a periodical type of fever, which was converted by the winter's cold into one of a continued form, and again brought back to its original type by the influence of the milder temperature of spring. It is probable that any disturbing cause may operate as an exciting occasion to Intermittent fever during summer and autumn in those who are exposed to malaria, when its own nature, the constitution of the year, and the state of predisposition favour the development of this form of fever. We know that a concentrated state of the remote cause, cooperating with high temperature, gives rise to an aggravated Intermittent and Remittent, and that if to these be added the most favourable state of predisposition, Yellow fever ensues; but if the temperature be below the degree of the periodical type of fever, it assumes a continued form. This is fully exemplified by the account of fever in the interior and on the sea-coast of the Southern States of North America, and during some years of its prevalence in New York, at Providence in Rhode Island, and in Vermont.

That the approach of cold weather usually puts a stop to the epidemics of autumn is a fact too no-

torious to require any illustration ; but though the prevalent form of disease is checked, other modifications, equally dependent on the same remote cause, occasionally arise : and that a Continued fever sometimes succeeds after an epidemic Intermittent and Remittent, when no other cause for it can be assigned than the change of temperature, is proved by the epidemic at Norfolk and at Boston ; and that the influence of a medium degree of mean temperature disposes to the development of Continued rather than of Intermittent fever, is established by the frequency of the former in the higher, and of the latter in the lower, latitudes of America. There is, however, this difference in the continuance of fever in southern and in northern latitudes. In the former the intermittent and remittent types prevail in autumn, and cease on the approach of cold weather. A few cases of Continued fever may succeed ; but generally the form of disease is that of Peripneumony, which prevails on the transition from autumn to winter, or winter to spring. In the latter, the autumnal form of disease is a Continued fever, which in sickly seasons sometimes extends through the winter, and the Peripneumony is generally a spring epidemic, sometimes of the most formidable and fatal character. It is at least a questionable point whether the Continued fever, extending through the winter, owes its prolongation to any other cause than the primary influence of the autumnal malaria, requiring different times and exciting occasions for its development in different persons, especially as we know that vernal Intermittents are autumnal diseases delayed from some

obscure peculiarity in the predisposition of the persons affected by them ; and it is reasonable to argue, if the periodical and continued types are equally the products of malaria prevailing in different latitudes in the same season, and obeying generally the same laws, owing their characteristic peculiarities merely to the difference of mean temperature, that if the one form is delayed in its development the other may be so, without supposing any cause is concerned in the phænomena of the one case more than in those of the other.

In those latitudes where the temperature is so uniformly high throughout the year as to offer no impediment to the evolution of malaria from the surface of the earth, we find that though Yellow fever begins in sickly years in spring, or prevails, as at Vera Cruz, throughout the year, it is essentially, as an epidemic, an autumnal disease, requiring, therefore, the long-continued impression of heat to give prevalence and intensity to it. The existence of cases in March and April shows the presence of the remote cause to which all are exposed ; and its affecting only a few would seem to prove the necessity in the many of the cooperating effect of prolonged heat to excite it in them. We might reason in the same way on the Continued fever of higher latitudes, which, being the disease of a low mean temperature, is later in its appearance, from the absence of that concentrated malaria which is essential to it ; and though an autumnal disease, it may require in many the long-continued and maximum impression of cold to give develop-

ment to it. On this view Intermittents and Remittents would appear to be the appropriate diseases of hot latitudes, aggravated by heat to the degree of Yellow fever in those favourably predisposed; while Continued fever is the disease of temperate climates, rendered more formidable by the winter's cold. This at least is true where the annual epidemic, as from the year 1661 to 1664, began as an Intermittent, and ended towards the winter as a Continued fever. The remote cause during the heat of summer gave rise, as in hot climates, to the form of fever apparently naturally associated with a high temperature; but as it increased in intensity, it became associated with a temperature incompatible with the aggravated forms of the periodical types of Marsh fever, but naturally favouring the continued form of the disease, which consequently prevailed under the influence of cold; probably from the tendency which this has to excite inflammation, a condition which, arising spontaneously out of the excitement of Intermittent fever, or induced by bark and a hot regimen, converts it even in hot climates to a Continued fever, precipitate in its character from the high degree of irritability existing in the organs. The lower degree of this irritability in the natives of the northern temperate climates is probably the cause why Continued fever in them is a disease of such low excitement and of a more chronic character than the fevers of the south.

The existence, then, of Intermittents in London during the summer and autumn of the years under consideration, followed by a Continued fever as the

cold weather set in, would lead us to the comparison of this epidemic with those of Vermont as described by Dr. Gallup.

He speaks of Intermittents existing in the upper parts of the State on the low lands bordering on Lake Champlain, and of Typhus being the ordinary form of fever in other parts, sometimes continued through the winter. It is possible that the amount of malaria in the one situation might be such as to give rise to Intermittents in those exposed to it at a time when the more cultivated, more hilly and less marshy parts of the State were free from fever. But the continued impression of the remote cause, though less abundant and less concentrated, would, as the autumn advanced, ultimately affect the general inhabitants of the State, and the fever, from the low mean temperature, would then assume the continued form. Dr. Gallup's observations confirmed him in the belief that contagion had nothing to do with the propagation or origin of the disease; and Sydenham evidently considered his Continued fever as a condensed Intermittent, and nowhere alludes to anything like a contagious property as belonging to it.

As I think it important on so high an authority as Sydenham to establish the connexion between Intermittent and Continued fever, I shall refer to such passages in his works as relate to the subject; for the constitution of the years in question is highly interesting, as exhibiting both these forms, *the last that occurred for thirteen years*. That the causes which give rise to epidemic Marsh fever were not then at their height, appears from the existence

of autumnal Intermittents, considered as its milder modification, and from the generally mild character of the Continued fever which succeeded them in winter. The former, it is true, were of a "*bad kind*," and were lost in the continued type; but when they disappeared, the last became aggravated in its turn, and passed into the worst forms of pestilence, which gave way to the malignant disease that ushered it in; and fevers of a continued form, varying in some respects from each other, prevailed for seven years before the intermittent type reappeared. The connexion of these subsequent fevers with malaria may be inferred from the acknowledged transition of the milder into the more severe form of the present constitution, strengthened by the absence of the periodical type, and by their prevailing at the same seasons and under similar circumstances as those of 1661.

Sydenham, in speaking of Intermittents, refers them to the spring and autumn,—those of the spring commencing in February, and those of the autumn in August; but if they are epidemic, they begin sooner. The autumnal ones, which had reigned several years, "appeared with new force about the beginning of July 1661, especially a bad kind of Tertian, which seized whole families in many places with great devastation in August, after which it gradually decreased on the approach of winter, so as to appear seldom in the month of October. It differed from the Tertians of other years by the fit being more severe, the intermissions not so manifest, the tendency to a double fit greater, the tongue more black and dry, the loss of strength and appe-

tite greater, and the disease more mortal than Intermittents usually are. A few Quartans accompanied these Tertians; but both of them went off on the first coming on of winter, and were followed by a Continued fever, differing from the nature of autumnal Intermittents only in this, that *they* happened at stated times, but *this* without intermission, for they both seized almost in the same manner; those that were violently attacked with either having a vomiting, dryness of the external parts, thirst, and blackness of the tongue; and sweats also, towards the end, discharged the morbid matter in both cases *."

That there is almost every gradation between the mildest Intermittent and a regular Continued fever, would appear from the observations of Sydenham, Clegborn and Torti; and in a disease which is so Protean in its shapes as Marsh fever, even under a continued form, this irregularity in the periodical types is an important consideration towards an elucidation of the natural history of the disease. "All Intermittents," Sydenham says, "in general begin with a chilliness and shaking, soon followed by heat and sweat. The patient usually vomits both in the cold and hot fit, complains of sickness, is thirsty, and his tongue dry, &c., which symptoms abate as the sweat increases, till an end is put to the fit. The patient continues tolerably well till the fit returns at the usual time, which in a Quotidian happens once in twenty-four hours, in a Tertian every other day, and in a Quartan every fourth

* See Sydenham's Works, by Swan, pp. 13, 49, 51—55, 65.

day. But the two latter are frequently doubled, so that a Tertian comes every day, and a Quartan two days successively, the third being the intermediate or well day ; and sometimes, when it proves a triple Quartan, it comes three days successively, the Intermittent deriving its name from the manner of its first appearance ; and in this redoubling of the fits, the adventitious one precedes or follows the original one."

"Vernal Intermittents, most of which are Quotidians or Tertians, appear sooner or later according to the disposition of the season. The vernal effervescence seldom proves continued and regular : hence there are but few continued fevers in spring, particularly in its decline, unless an epidemic constitution happens to prevail. They seldom last long, and always prove salutary. But autumnal Intermittents differ very much from vernal ones. When the constitution is epidemic, they appear about June, but otherwise not till August or September. It is a difficult matter at the first appearance of those that are epidemic in autumn to distinguish them exactly, because at this time they are accompanied with a Continued fever, and for some time afterwards nothing more than a remission can be discovered ; but by degrees they perfectly intermit. They are either Tertians or Quartans, and so much alike that they frequently vary from one to the other. But vernals never assume the shape of Quartans, nor have I ever seen a Quotidian in autumn, unless a Double Tertian or a Triple Quartan should deserve that name."

In recommending a stimulant in protracted cases,

"to finish the languishing fermentation," he says, "I have used this medicine with success at the denudation of the disease; but if given sooner, such heating medicines either double the fit, or change the disease to a Continued fever, which has also been observed by Galen."

In speaking of the Continued fever, he says, "It may even from hence appear that it belonged to the class of autumnal Intermittents, because it very rarely showed itself in the spring. This Continued fever, therefore, appeared to me a kind of compendium of the Intermittent, as, on the other hand, each single fit of the Intermittent was a kind of compendium of the Continued fever. The difference between them consisted chiefly in this, that the Continued fever finished its period of effervescence all at once in the same constant course, but the Intermittents by fits at different times.

"The Tertian fever, which spread very wide in 1661, contracted itself in the succeeding year; for in the following autumns, Quartans prevailed over the other epidemics. As these always grew milder after the autumn, the Continued fever, which appeared more rarely during all this time, now raged more violently till the spring, when vernal Intermittents succeeded. This Continued fever appears to me of a more capital kind than any of the rest, because nature brought the febrile matter to a due concoction, and expelled it in a limited time more uniformly and regularly than in any other fever; and as those constitutions which favour autumnal Intermittents return more frequently than such as produce other epidemics, it follows, that the Continued

fever attending intermittents occurs oftener than any other."

It is sufficiently apparent from these observations, that Sydenham considered both these forms as different modifications of the same disease; and judging from the succession and character of the periodical types, it would appear that the autumnal Intermittents, which were of a bad kind, began the annual epidemic; that they first appeared as Tertians, then as Quartans; that these yielded on the approach of winter, and were succeeded by the continued fever, which in its turn gave way to vernal Tertians or Quotidians, of so mild a character that they lasted but a short time, and might be safely left to nature. If we were to conjecture causes to explain the character and succession of these different forms of fever, it might be urged, that in those who were affected by the severe Intermittents of autumn, there was a high degree of predisposition, upon which the remote cause promptly acted, and that this state of predisposition was connected with that irritability of the organs which is induced by the protracted influence of heat: that in those who were affected by the Continued fever in winter, the predisposition was less, and required the agency of a transition from heat to cold, as an exciting cause of the disease, which, arising under the influence of a low temperature, assumed a continued form; and that in those who were affected by Intermittents in the spring, the predisposition was least, requiring the transition from cold to heat as the exciting occasion; and that their irritability being less, as well as their proneness to disease, it assumed in

them the mildest form upon the return of warm weather.

I cannot but think there is at least a probability of truth in this explanation. The gradation of effect is certainly very remarkable. Mild Intermittents apparently prevailed previous to 1661. In the autumn of that year they became severe, and were followed by Continued fever; and in 1662, the tertian type gave way to the quartan, which is the more formidable of the two. They both passed occasionally into the remittent and continued form, were succeeded by the last in their decline; this at times repassed into an Intermittent: and that the vernal Intermittents were the last manifestations of the epidemic of the year, would appear from their invariable mildness, compared with the autumnal ones. The different states of predisposition, or proneness to disease, shown by the earlier or later development of it, taken with the influence of autumn, winter and spring upon the body, explain the forms and the degrees of fever in these seasons: the greatest susceptibility cooperating with autumn giving rise to a severe Intermittent; a less active one, under the depressing influence of the cold and damp of winter, giving rise to a comparatively mild continued fever; and the least susceptible condition, on the return of spring, manifesting the mildest form of the disease.

However difficult it may be by such a mode of reasoning to produce a perfect conviction in the mind of its truth, yet the existence of the intermittent type in the warm seasons, and of the continued in the cold, is analogous to what we have seen of

their general prevalence in low and high latitudes ; and the aggravated Tertians or Quartans in the higher temperature of autumn, with the mild Tertians or Quotidians of the genial warmth of spring, correspond to the known influence of heat in giving a greater or less intensity to fever.

That the constitution of these years, though probably an aggravation of a preceding one, was not on the whole unfavourable to life, appears from the existence of Intermitents, and from the mild character of the Continued fever. Sydenham considered it the capital and primary fever of Nature, from the regular mode in which she accomplished the digestion of the morbid matter in a limited time ; and he inferred, from the more frequent epidemic prevalence of Intermitents over all other diseases, and from its evident connexion with them, that it was the most common of all continued fevers. It passed away with them ; and when concurring causes, in subsequent years, were such as no longer to produce the milder forms of fever, they were supplanted by diseases, first of a malignant, and afterwards of an inflammatory and irregular kind ; as if from a gradation of causes, there was the same progressive aggravation of character in fevers of a continued form, as in those of the intermittent ; that while the one passes through an ascending series from a mild Quotidian to Tertians and Quartans of variable character, and these to Remittent and Continued fever, the other, in different constitutions, unattended by the periodic types, passes through various grades of severity, from the regular and capital fever of Sydenham to the worst forms of pestilence.

While both the types are occasionally blended together, or either lost in the other, they, preserving their original forms, exhibit equal degrees of malignity; for there is as much difference between an ordinary quotidian Ague and a malignant tertian, as there is between the lowest and the highest grade of Continued fever, and the remittent type insensibly unites them together.

The variable character of Intermittent fever is more fully exemplified in the work of Cleghorn * on the Epidemical Diseases of Minorca, where the extremes of temperature vary from 41° to 87° .

The extract, which will be found under the head of Mediterranean Diseases, from this admirable work, which Rush says contains a greater mass of practical knowledge in a small compass than any other of the same kind in medicine, sufficiently exemplifies the variable character of Marsh fever, the transition of the periodical types into the continued, and of the mild into the malignant forms. That regularity of period cannot be considered characteristic of Intermittents; and that a definite length of interval cannot be established as belonging to them, notwithstanding the arbitrary distinctions of nosology, are manifest. The gradation from perfect intermission to perfect continuity of fever is shown in the series from the simple Tertian, through the double, triple, double Subintrant, Semitertian, Remittent to the Continual; and the duration of the last, arising often spontaneously in the second week out of the distinctly intermittent, and extending to

* Cleghorn, Observations on the Epidemical Diseases in Minorca 1744—1749. Fifth edition, London 1815. Chap. iii.

twenty-one days, accords with the limit commonly fixed to Typhus, existing alone as an epidemic continued fever. In the comparatively equable climate of Minorca, where the average mean temperature, like that of the Southern States of America, favours the preponderance of Intermittents, we find the same influence of the progressive effects of season on the character of disease. They begin regularly in July; but as the season advances they become irregular, often degenerate into malignant fevers, and about the equinox assume a great variety of forms, counterfeiting Continued fevers; and when they cease on the approach of cold, they are followed by Peripneumonies. In the autumn, they occasionally pass into Yellow fever, with coffee-ground vomiting and oozing of blood from the nose; and it is important to note, that the English residents in the island are most obnoxious to this form of the disease, while the native peasantry are the principal victims of the winter Peripneumony. This is in strict accordance with the facts we have observed in the Southern States of America, and proves the influence of temperature on the character of Marsh fever. The constitution of the English, unseasoned to the high heats of autumn, subjects them to Yellow fever, to which the natives are not liable, from being habituated to the climate; but on the transition from heat to cold, these become subject to Bilious Peripneumonies, while the English, accustomed to greater vicissitudes of temperature, are not susceptible of them.

The irregularity of Intermittents appears not only in their periodical forms, but in the sym-

ptoms attending them; for some end by evacuations from the kidneys or bowels rather than by the skin; and the observations of Cleghorn enable us to trace some analogy, at least, between them and diseases known by other names. *Besides Typhus*, to which the Continual Tertians of Minorca protracted to the twenty-first day are analogous; and Yellow fever, to which the cases with yellow skin, black vomiting and hæmorrhage from the nose exactly refer; it might be argued, that those in which the skin was constantly covered with sweat, were probably analogous to the English Sweating sickness of the fifteenth century; that those cases, which were attended by parotids and abscesses near the hips, bore a close resemblance to Plague; and that where the pains in the back and limbs were so intolerable as to induce the unhappy sufferers to commit suicide, we trace an approximation to the *Break-bone fever* of Rush of 1783. We also find abundant evidence in Cleghorn that Cholera and Dysentery are intimately associated with Marsh fever. The former not only attacks adults, as in America, returning sometimes periodically, like the fits of a Tertian, but assumes the form of *Cholera infantum*, so common in the United States, and supposed by some American authors to be peculiar to them.

I have availed myself of the authority of Cleghorn, because it is one of the highest and least questionable in the records of medicine; and without seeking further for evidences of the indeterminate character of Intermittents, I shall assume its existence on the strength of his testimony and that of the illustrious Sydenham. That the changes

which take place in their character in the successive seasons of one year in the same place, should be met with more marked and decided in different years in different places, will not appear surprising to those who consider the variable character of years with regard to the epidemic constitution of the atmosphere, the mean temperature, the presence or absence of winds, the period of the occurrence of rains, their excess or deficiency, &c. If the milder modifications of Marsh fever sometimes prevail alone, if on other occasions they are blended with the more severe,—if from predisposition, locality, intenseness of the remote and exciting causes, a few cases of the most malignant forms should be met with,—I can see nothing anomalous in these predominating in some years, especially as we see something like a progressive rise and fall in the malignity or mildness of epidemics in the successions of years.

The causes of epidemics in particular situations, do not appear to be exclusively confined to the year or season of their prevalence. It is a common observation in the records of pestilence that foreigners often escape, as if predisposition was not a sudden but a gradual condition, arising out of the successive impression of variable seasons and years on constitutions native of the climate, to which strangers are not exposed. And what gives an almost irresistible conviction to the mind of pestilence being an indigenous evil, is its gradual approach, and the increased mortality of all forms of disease previous to its own destructive ravages, as if a morbid cause was abroad aggravating the

effects of every malady, and which, deepening in intensity, finally moulded, as it were, every accidental disturbance of the health to its own shape and features.

But to return to the consideration of the Plague of London. The symptoms of the Continued fever of the constitution of 1661 to 1664 were, great faintness, retching, vomiting, dry black tongue, great and sudden loss of strength, dry skin, looseness in the decline, cough, sometimes delirium, suppression of urine, epistaxis and hiccough. It lasted from fourteen to twenty-one days, when it went off with sweat or a gentle moisture.

In his recapitulation, Sydenham remarks, that "the fever which depended on that constitution in which Intermittents prevailed over the rest, changed, if it was tedious or the patient was weakened by large evacuations, sometimes to an Intermittent, while the fevers of following years scarce ever became intermittent." It appears to have ceased at the end of the autumn of 1664; for, he says, on the departure of the Depuratory fever, a severe frost set in at the beginning of the winter of 1664, which did not abate till the middle of March 1665. It was soon succeeded by a pestilential fever, and shortly after by the Plague itself.

"The winter of 1664—1665 was extremely cold, and accompanied with a continued frost till spring. On its breaking up, Peripneumonies, Pleurisies and inflammatory disorders arose, which quickly made great devastation; and with them appeared a Continued epidemic fever, of a very different kind from that of the preceding constitution, which usually

seized scarce anybody at that season of the year; for the pain in the head was more violent, the vomitings more copious, and the looseness, which was generally prevented in the former years by a vomit, was increased thereby in the present fever, and yet the vomiting continued; the external parts were dry, but, after bleeding especially, a sweat was easily procured, and soon abated the symptoms, and this might be done at any time of the disease, whereas in the fevers of the preceding constitution, it could not be safely attempted till the thirteenth or fourteenth day, and was not easily raised then: the blood taken away was like that of Pleurisy or Rheumatism, only less sily *."

Sydenham has not entered into any particular consideration of this fever, which is much to be regretted, as it stands in so interesting a relation to the Plague, which it immediately preceded and followed. That he thought it closely allied to the Plague is evident; and that he seems to have considered the last capable of being predicted for some years before its appearance, from the signs of preceding epidemics, is manifest from the observations he makes on the probable succession of diseases to be expected after the Intermittents of 1679; and yet he asserts that the importation of contagion is essential to Plague, and doubts if a pestilential disposition of atmosphere is of itself able to produce the disease, though without such a constitution it cannot prove epidemic.

Plague, therefore, according to this great man's opinion, has never been an indigenous disease of

* Swan's Sydenham, p. 73.

this country. Though its epidemics from natural causes vary from the mild Intermittents previous to 1661 to the pestilential fever of the spring of 1665, they are not capable of rising to Plague, though the difference between it and the fever consists only in what he calls some "peculiar concomitants."

In speaking of this fever, he says, "Whether it deserves to be entitled a *Plague*, I dare not positively affirm; but this I know by experience, that all who were then seized with the true Plague, attended with all its peculiar concomitants, and for some time afterwards, in my neighbourhood, had the same train of symptoms, both in the beginning and through the course of the disease." This was at the end of May or beginning of June, and on his return to town "soon afterwards, whilst the Plague yet raged violently, I attended," he says, "several persons in fevers, which, to my great surprise, I found were of the same kind and nature as those I had so successfully treated before my departure."

It will be recollected, that on the breaking up of the long and severe frost in March 1665, Peripneumonies and Pleurisies arose with the Continued fever. In a case which occurred to Sydenham in May, "though it had not the pathognomonic or distinguishing signs of a Pleurisy," yet it bore so close a resemblance to it, that he conceived the same treatment was applicable in both cases; and experience proved he was right.

"At the beginning of May 1665," he says, "I attended a lady who, besides the burning fever, which began a little earlier, had frequent vomitings, and other febrile symptoms. I began the cure with

bleedings, and next day, to guard against a looseness, directed a vomit, which operated pretty well. Visiting her next morning, I found she had a looseness, which perplexed me, having rarely met with this symptom for some years before. Hence I judged that this was no common fever. A senior physician being joined with me in consultation, bleeding was repeated, which the age, constitution and the violent ebullition of the blood seemed to demand: moderate cooling cordials were also given, and glysters injected every other day. At the decline of the disease, we directed some of the stronger alexipharmics, because there arose very uncommon and irregular symptoms, which are generally esteemed signs of considerable malignity; but all these means availed nothing, and the patient died about the fourteenth day. The singular nature of this fever set my head at work for some days afterwards; and recollecting that the violent heat continued even after repeated bleeding; that the patient's cheeks were red; that some drops of blood distilled from her nose a little before death; that her blood resembled that taken away in a Pleurisy; that she had a cough and dull pains in the vital parts or breast; and that it was that season which includes the end of spring and beginning of summer, which is less disposed to produce Continued fevers,—these, dividing, as it were spontaneously, at this time, and either becoming Intermittents or suddenly turning to Pleurisies, and the like inflammatory disorders; and lastly, that Pleurisies were very *epidemic* at the same time, I concluded that this fever, though it had not the pathognomonic signs of a Pleurisy or

Peripneumony, was symptomatic, and occasioned by an inflammation lurking near the vital parts, though it was unaccompanied with pain in the side or great difficulty of breathing, and that I ought to have followed the same method here I had frequently used in a Pleurisy with good success; and, indeed, it afterwards fully answered my expectations, for being called some time after to a man, affected exactly in the same manner, I began and finished the cure by repeated bleeding, after the method already commended in the Pleurisy. And about the end of May and beginning of June, this fever being then very epidemic, I recovered numbers by the same means. From this time forwards, that dreadful Plague began to rage with great violence which afterwards made such devastation."

This fever, then, stood intermediate between the spring Pleurisy and Peripneumony and the Plague*;

* It would be highly interesting to observe particularly these cases of transition from one settled form of an epidemic to another, as in the instance noticed by Sydenham, where the Peripneumony was passing into Plague, the case having the fixed symptoms neither of the one nor the other. Gallup alludes to certain localities where the Peripneumony of America prevailed with the Spotted fever, the difference between the two consisting in the force of the morbid action falling in the first on the chest, and in the last on the head. Sarcione, in the Epidemic at Naples, notices similar transitions, from the abdomen to the chest, and finally to the head, constituting, in well marked cases, Diarrhoea and Dysentery, Peripneumony and Petechial fever. These intermediate forms cannot be passed over in the estimate of the *nature* of these nosological modifications; and the question of their morbid lesions is now a subject of great interest and importance, since Louis has asserted that Typhus essentially consists in an affection of the glands of Peyer. Conventionally, this peculiar lesion may be said

as if the malaria of the preceding autumn, which had given rise to the Continued fever of 1664, was checked in its morbid influence by the steady and intense cold of winter; and on the breaking up of the frost in March, had manifested itself in affections of the chest, and afterwards in the form of an inflammatory fever, which, under the influence of seasons unusually prejudicial to health, gradually became converted into the worst forms of pestilence.

This view is justified by the analogous modifications and progress of Marsh fever in America, where we have repeatedly seen the epidemics of autumn checked effectually by the steady cold of winter, reappear under the form of Pleurisy and Peripneumony in spring, converted into Yellow fever in summer and autumn, and again arrested by the transition of autumn into winter. If we had particular descriptions of the character and progress of the three principal forms of disease in London during the year 1665, it is probable that we should have been able to trace imperceptible transitions from the spring Pleurisies to the summer fever, and from this to Plague. It is evident that the fever bore intermediate relations to the first and last; and though precisely like neither of them, it is sufficient in the changeable character of Marsh fever to observe some common points of resemblance; for, as

to be pathognomonic of Typhus; but other diseases having other lesions, cannot arbitrarily be separated from Typhus, merely from the absence of the affection of the glands of Peyer, if the same general causes, modified by season, predisposition, intensity, &c., are concerned in their production as in that of Typhus.

its forms are modified by temperature, we can easily conceive that, under the operation of the same remote cause, the Pleurisy of spring should pass into the malignant fever, and this into Plague, especially when we take into consideration the different states of individual predisposition, and the cooperation of a pestilential state of atmosphere, deepening in intensity and in its effects by unusual heat and the prevalence of southerly winds, followed by a close and stagnant state of air.

I take it for granted that the epidemic fever of 1665 was considered by Sydenham an indigenous disease. He calls it a "*true malignant*" fever, and wishes to distinguish it from other fevers rendered malignant by unskilful treatment; and he seems to make malignancy consist in the greater violence of the symptoms. His expression is, "in superioribus obiter admonui e Febribus nonnullas in malignarum classe vulgò reponi, cum indomita symptomatum sævitia, quæ huic opinioni patrocinari videtur, non à venenosâ morbi indole, sed à therapeiâ perperam administratâ proficiscatur. Atqui Febris verè maligna non est omnium dierum morbus, utpote quæ ab illis Febrium speciebus, ob symptomatum anomaliam eâ nomenclaturâ utcunque insignitis, totâ suâ ideâ ac ingenio dissideat. *Reverà enim cum ipsissima Peste specie convenit, nec ab eâ nisi ob gradum remissionem discriminatur.*" In this passage he considers the fever to be of the same species with the Plague. In a subsequent one he says, "Febri autem illi, de qua modò loquebar, an Pestis appellatio attribui mereatur, non ausim definitò pronunciare. Hoc tamen exploratè cognitum

habeo, omnibus quos illo et aliquanto post tempore ipaissima Pestis cum universo symptomatum sibi peculiarium apparatu in meâ viciniâ afflixit, eandem tam in primo morbi insultu quam in decursu, accidentium *συνδρομῶν* adfuisse."

And in speaking of the "aeris dispositio" which gives rise to epidemic diseases, he says, "quicquid sit, hoc saltem nomine Dei Opt. Max. clementiam ac bonitatem meritissimo jure veneremur, quod aeris constitutio *λοιμωδεῖς*, id est, Pestem malorum omnium inmanissimum, ac humano generi maxime internecinum inferentes, rarius evenire voluerit quam quæ cæteris affectibus minus exitialibus suscitandis inserviant. Unde fit quod hunc orbem nostrum Britannicum Pestis vix frequentius quam post annorum circiter triginta vel quadriginta intervalla (scilicet sc. pernicipi vigore ac totâ furiarum acie) adoriatur. Quæ per annos aliquot Pestem insigniorem subsequentes, sparsim occurrunt pestiferorum funera, paulatim imminui ac evanescere solita, Pestilenti aeris diathesi etiamnum ex parte perseveranti, nec dum in aliam salubriorem penitus immutatæ attribuenda sunt, quippe quæ antegressæ messis duntaxat spicilegia reputari debeant. A quibus etiam nuperæ luis reliquiis, fit ut Febres quæ anno post graviolem Pestem uno aut altero passim grassantur, Pestilentes esse soléant; et licet aliquibus veræ Pestis notis destitutæ, tamen ejusdem naturam ac indolem quamplurimum referant, necnon consimilem medendi rationem sibi vindicent, quemadmodum inferius ostendemus *."

* Sydenham, Opera Universa. Edit. tertia. Londini 1705. See pp. 70, 71, 86.

The question that naturally arises out of this exposition of the opinions of Sydenham is, whether the pestilential constitution of atmosphere, which he says is essential to the epidemic prevalence of Plague, is not the cause of the disease, wholly independent of any foreign contagion. That he thought it the cause of the malignant fever I think is evident; and this attended all those who had the peculiar symptoms of the Plague, and both preceded and followed it: and though he dare not affirm it is the same disease, he thinks it is of the same species, or that it approximates in kind to it. If it be considered the product of local causes and atmospheric distemperature, its milder character would be explicable from the less intensity of the remote cause, and the comparatively less prejudicial influences of the seasons in which it occurred; and the Plague might be considered as its aggravated form, naturally arising from the morbid influences of a hot and stagnant autumn. If an imported contagion was essential to the development of Plague in 1665, and its prevalence is to be explained exclusively by the concurring pestilential state of the atmosphere which gave rise to a malignant fever, why did Plague subside so remarkably in London in 1666, while this state of air, with its associated fever, remained; for Sydenham says that the last prevailed throughout that year? It would naturally be expected under such circumstances, especially with the Plague raging in many parts of England, that, with a malignant fever in the metropolis to favour its reception, it would have appeared there, from the multiplied sources of contagion, with something like the viru-

lence of the preceding year. Its not doing so, its very partial prevalence there, and the more general diffusion of the epidemic malignant fever throughout the year, appear to me conclusive evidences against the necessity of any imported contagion, and in favour of the mere difference in degree between the Plague and the malignant fever. They seem to me to bear the same relation to each other as the Intermittents and the Continued fever of 1661 did, or as the early Intermittents of summer and the Yellow fever of autumn do in America.

If indigenous causes gave rise to the malignant fever of spring, and the symptoms of it attended those who had the Plague, it may be reasonably asked, in what respects they differed, or what contagion added to it to constitute Plague? If Plague be so variable, indeterminate and irregular a disease as Sir A. B. Faulkner and Bancroft assert, there are no peculiar symptoms we can select as belonging invariably to it for a specific contagion to generate; for the bubo, carbuncle, petechiæ, vibices are not constant or peculiar to it. If, however, Sydenham alluded to these symptoms, as well as to the precipitate fatality, as constituting the peculiar concomitants of Plague, it is far more probable that, admitting the frequency or even constancy of their occurrence, they depend rather on intensity of impression than on the action of a separate cause. The term malignity is used by Sydenham as synonymous with violence and irregularity of symptoms, and he admits that common fevers may be rendered malignant by improper treatment. But what this effects in ordinary fever, occurs sponta-

neously in severe epidemics, as I think he admits in the fever of the spring of 1665 : and considering it as a Marsh fever, knowing the extreme variable-ness of this disease, I think there can be no doubt that intermediate shades of virulence between it and the worst forms of Plague must have occurred ; that is, that the fever must have manifested occasionally less or more of those glandular and cuticular symptoms by which it is attempted to distinguish Plague from all other diseases.

Sydenham does not afford us any light on this subject, nor does he give any detailed account of the Plague itself ; but the little he says of it is in accordance with the character of his sagacious mind. That he either could not precisely distinguish between the malignant fever and the Plague, or that he thought the distinction of no practical advantage, would appear from his speaking of them together, and recommending a similar treatment. He was led by analogical reasoning in the spring to cure the fever at that season by repeated bleeding, as he did the Pleurisy ; but in the summer and autumn he preferred sweating, or if a swelling had not yet appeared, he first bled moderately.

“The Plague,” he says, “usually begins with chilliness and shivering, like the fit of an Intermittent ; and soon after, a violent vomiting, painful oppression at the breast, and a burning fever, with its common symptoms, succeed, and continue till the disease proves mortal, or the kindly eruption of a bubo or parotis discharges the morbid matter and cures the patient. Sometimes the disease, though rarely, is not preceded by any perceptible fever, and

proves suddenly mortal, the purple spots, which denote immediate death, coming out even whilst the persons are abroad about their business. This hardly ever happens but in the beginning of a very fatal Plague, and never in its decline, or in those years wherein it is not epidemic. Sometimes swellings appear without having been preceded by a fever or any other considerable symptom; and such as are attacked in this favourable manner may safely follow their business, and need not observe any particular way of living."

Dr. Armstrong, in his observations on Plague, considered these varieties of Sydenham as examples of the inflammatory, the congestive and the simple forms of fever; and he referred to similar examples of the disease at Malta noticed by Sir A. B. Faulkner, who says, "Irregular and inconstant as are all the phænomena of this perplexing disease, its varieties may be classed under the three following species, viz.

1. "That in which, at the first attack, the energy of the brain and nervous system is greatly impaired, indicated by coma, slow, drawling, or interrupted utterance; the tongue white, the anxiety great, countenance pale, stomach extremely irritable, and the strength much impaired. Rigors and pain in the lower part of the back are among the early precursors of the other symptoms. This was the most fatal, and chiefly prevailed at the commencement. Those who were thus affected sometimes died in the course of a few hours with petechiæ.

2. "That in which the state of the brain is the very reverse, the symptoms generally denoting a high

degree of excitement. The pain of the head is intense, thirst frequently considerable, though sometimes wanting, countenance flushed, and utterance hurried. The attack is ushered in by the same rigors and pain in the back as in the foregoing. Epistaxis not unfrequently occurs: the glandular swellings come out tardily, and recede again without any remission of the general symptoms. Carbuncles arise over different parts of the body or extremities, rapidly disposed to gangrænous inflammation. The delirium continues extremely high and uninterrupted, and the patient perishes in two or three days, sometimes lingers to the seventh, rarely beyond this period without some signs of amendment. Of this second description the examples have been very numerous, and were nearly as fatal as the preceding. In the countenances of some, just previous to the accession of the more violent symptoms, there is an appearance of despair and horror which baffles all description.

3. "This is nearly akin to the last, only the symptoms are much milder, and the brain comparatively little affected. The buboes and other tumours go on more readily and kindly to suppuration; and by an early employment of remedies to assist the salutary operation of nature, the patient has a tolerable chance of surviving. Cases of this class are often so mild that persons have been known to walk about, in seeming good health, without any evident inconvenience from the buboes; of this last species, the instances have not been unfrequent, chiefly occurring towards the declension of the malady*."

* Faulkner, 'On the Plague in Malta,' Edinb. Med. and Surg. Journ., vol. x. p. 143.

I have, with the exception of this extract from Sir A. B. Faulkner's observations on the Plague of Malta, confined myself to the report of Sydenham, because his authority is the highest in the modern records of medicine. That he believed a foreign contagion essential to Plague, we have the fullest proof from his own declaration ; but I confess, from a careful attention to his writings, it appears to me he rather followed the popular opinion than one grounded on his own experience or supported by his own principles. He contents himself with a bare assertion of the necessity of contagion to give origin to the disease, and asserts its propagation by a sort of inoculation of the atmosphere, in the same way as some modern contagionists contend Yellow fever is propagated. It is curious that later advocates of contagion deny entirely that Plague can be extended in this manner ; and therefore if actual contact, as they assert, is necessary, the testimony of Sydenham is destroyed. He does not say from whence the original taint in 1665 was derived, but merely that "the Plague being always in some place or other, it is conveyed by pestilential particles, or the coming of an infected person from some place where it rages into an uninfected one, and is not epidemic there unless the constitution of the air favours it."

This solitary germ, then, of the disease once obtained and rooted, immediately grows to maturity, and its emanations infect far and near ; for, he says, "besides the constitution of the air, as a more general cause, there must be another previous circumstance to produce the Plague, viz. the receiving the effluvia or seminium from an infected person,

either immediately by contact, or mediately by pestilential matter conveyed from some other place. And when this happens in such a constitution, the whole air of that tract of land is quickly infected with the Plague by means of the breath of the diseased, and the steam or vapour arising from the dead bodies, so as to render the way of propagating this dreadful disease by infection entirely unnecessary; for though a person be most cautiously removed from the infected, yet the air received in by breathing will of itself be sufficient to infect him, provided his juices be disposed to receive the infection."

This is equivalent to the admission that it arises sometimes from the atmosphere. If the pestilential state of the atmosphere was capable of generating the malignant fever, and this differed but in degree from Plague, we might perhaps more satisfactorily refer the aggravation of the disease to the influence of summer and autumn than to a foreign cause accidentally introduced, the existence of which is at least hypothetical; which, if assumed to explain the great mortality of 1665, cannot account for the progressive increase of deaths up to the invasion of Plague, not only from fever, but other diseases: nor will its importation from abroad into the parish of St. Giles do away with the anomaly, that while infected goods from a distant country were capable of developing an active and wide-spread disease in that part of London, other portions of the city and the country were for a time exempt from its ravages. If it be contended that this exemption was owing to the absence of infected persons or things, proved

by the absence of the disease, we can scarcely admit the possibility of such non-intercourse between different parts of the same city, so as to exclude persons and goods passing from the sickly to the healthy districts ; and if it be urged that the appropriate state of atmosphere for the reception of Plague did not exist at first beyond the precincts of St. Giles, and therefore that the disease could not extend, notwithstanding a free intercourse, still the doubt arises whether the disease, when extended, did not depend on local causes rather than on contagion, judging from the analogy of Yellow fever and of epidemic Intermittents and Remittents. I have repeatedly had occasion to notice this desultory visitation and progress of Marsh fever, and however difficult it may be to explain, the frequent instances of it under a mild or a severe form must be taken into consideration as a part of its character. We observe it in the common Intermittent, which is so distinctly referable to marsh effluvium ; especially in the aggravated Intermittent and Remittent when epidemic ; and equally in Yellow fever, whether existing alone as such in the low latitudes of America, or associated with Typhus as in New York and Boston ; and consequently Plague, considered as a Marsh fever, offers in its desultory progress no anomaly, while on the conception of its being exclusively a contagious disease there appears the greatest inconsistency attending it.

We shall ever be liable to inconsistency and error in reasoning on this subject, by considering Plague a disease *sui generis*. That it is not so, is put beyond all possibility of doubt, not only by its confessed

variableness, but by the admissions of the very highest authorities on the subject. It is no more a distinct disease than Yellow fever, or malignant Small-pox ; and until this view of its nature prevails, there must continue to be the greatest obscurity in all our reasonings about it. Sydenham could not distinguish it from the malignant fever of the spring of 1665 : Mead allows that it always, without exception, begins first among the poor ; that a corrupt state of air attends it ; that unusual malignant fevers precede it ; and he fails entirely in his attempts to draw a distinction between them : for what reliance can be placed on a diagnosis founded on *degree* of contagion, on a greater or less pestilential character of carbuncles, or on a difference as to the time of their coming out ? Diemerbroeck says, that a malignant fever is always the precursor of Plague, and that it changes daily for the worse till it becomes spotted, and passes into true Plague. Mertens shows that a putrid fever existed for three years at Moscow before the Plague of 1771, and that when it first appeared in that year, it was merely considered a malignant fever. What definite or precise ideas do we derive of diseases such as Mertens alludes to, when he speaks of a putrid catarrhal fever in 1768, of a putrid bilious in 1769, of a putrid nervous in 1770, and then of a malignant fever, and of the Plague in 1771 ? In the Plague of Marseilles 1720, there was a general belief that it was imported from Syria in May, though a pestilential fever, with buboes, carbuncles, parotids, sometimes suddenly fatal, had existed there for some weeks previously ; and yet Mead, who allows that an extraordinary

malignant fever did prevail before the ship arrived from Syria, and that it was attended with eruptions like the Plague, thinks it impossible to conceive that the true Plague could have existed before that arrival, because he held it as an axiom that Plague was always imported into Europe from Africa. He formerly had as strenuously contended that it was exclusively derived from Asia. Humboldt says, the inhabitants of Egypt attribute the mortal Typhus, known by the name of the Oriental Pest, to the arrival of Greek vessels ; while in Greece and Constantinople the same Pest is considered to come from Rosetta and Alexandria. This is precisely the same assertion as is made respecting Yellow fever ; the contagionists in America contending it is derived from the West Indies, and the Spanish colonists in Cuba asserting that it comes from the United States. Sauvages mentions a memorable fact respecting the Plague in the South of France in 1721, which is precisely analogous to what takes place in Yellow fever, viz. that it appeared and disappeared at Alet and Aix three or four times in the year, and that after two intermissions of a month, when not a case was observable, many persons were seized *suddenly* with it on the same day in three different towns ; and he justly infers from this, that the cause of the disease is to be sought for in the peculiar state of the air, and in the predisposition of the people of the country.

It is held as a natural inference, that if Plague appears in one country first, and afterwards in another, more or less remote, it must be derived from the place of its earliest visitation ; and as ships,

persons, or goods, pass from one to the other, proofs are never wanting to establish an imported contagion. If the arrival of the deadly poison be too late, as in the case at Marseilles, the disease previously existing, though malignant, suddenly fatal, with buboes, carbuncles, parotids, is said not to be the true Plague; and if it be too soon, and the disease does not appear for months afterwards, it is considered to be locked up till the epidemic begins. But we have facts enough to show, that an epidemical constitution of the atmosphere does not always hang over one country; that, as in the year 1798, in North America, it extends over a large space, falling with most severity in those places where local causes of disease exist to give it effect: and the observations of Dr. Gallup, as to the aggravation of the fevers in Vermont occurring simultaneously with the memorable Yellow fevers of 1793 and 1798 in Philadelphia, are very instructive on this point. Though the fever in Vermont was Typhus, there are few who can reasonably doubt that its greater frequency and malignity depended upon the same general causes as the Yellow fever of the South; and had the associated circumstances been the same in both parts of the country, the effects would have been similar; but the mean temperature, the predisposition, and probably the intensity of the remote cause were widely different, and what was Yellow fever in Philadelphia became Typhus in Vermont. We have seen them both existing together, as in Boston and New York; we have seen Intermittents, common Remittents, Yellow fever,

a chronic Typhoid fever, Dysentery, Cholera, Colic, existing together, or nearly so ; and from the history of particular epidemics, it is impossible to doubt that they are all only different expressions of one disease. The simultaneous prevalence of fever and Dysentery, from a drained pond, recorded by Dr. Buel, and noticed by Bancroft, establishes fully their relation so far as identity of cause is concerned ; and the coexistence of spasmodic Colic with Ague, intermitting in its attacks, and curable by the same means, is a proof how individual predisposition will vary the expression of Marsh fever. Cholera generally, in America, precedes the annual endemic fevers, especially in children ; but it often exists at the same time with them, and sometimes, like Colic, intermits in its attack, like that interesting case recorded by Dr. Duvall, vol. i. p. 399, which in some of its symptoms resembled the spasmodic Cholera of India.

If these apparently distinct diseases are really modifications of each other, as I think a candid appeal to facts shows that they are ; if Intermittent, Remittent, Yellow and Typhus fevers be one and the same disease in essentials ; and if the remote cause which gives origin to them sometimes produces Dysentery, Colic, or Cholera, in their stead, with what truth or consistency can we deny the close relationship between malignant fever and Plague ; especially when, on the authority of Mead, the first is admitted to have bubo and carbuncle, and the last, on the authority of Russel and many others, to be often without them ; and, according

to Bancroft and Faulkner, to be so variable and inexplicable a disease as to defy definition?

Independent of that inscrutable state of atmosphere which gives epidemic prevalence to fever, and which Hippocrates, Sydenham, and succeeding observers have resorted to to explain the diffusion, the malignity and the mortality of diseases in particular years, we have seen in America that visible local causes have existed to give locality and intensity to it. I quote as unquestionable proofs of this, the epidemics at New London, at New York, at Boston, and at Wilmington, Delaware, in 1798; and the desultory visitations of Yellow fever in the same years throughout the United States, connected with temperature, the course of winds, the presence of persons aptly predisposed to it, and local causes, are analogous to what is observed of Plague, considered, not as a disease *sui generis*, but, like Yellow fever, the most aggravated form of endemic disease.

The prevalence of Plague in one part of the Mediterranean, and its subsequent extension to another, is not necessarily a proof that its progress depends on the transportation of contagion, any more than it is to be inferred that the Yellow fever of New York in 1792, was derived from that of Charleston in 1791; or that of Philadelphia in 1793, from that of the first city in the year preceding. The progress of Plague over large spaces is like its extension in limited ones. It may take years to pass from one country to another more or less remote, as it takes weeks or months to pervade through all parts of the same city or country. We can con-

ceive that when an atmospherical constitution exists favouring its development, it would first occur where local causes were found most apt to generate it, as the filthy and crowded parts of large cities, abounding in a population predisposed at all times to the worst forms of epidemic disease; that a longer impression of the morbid state of atmosphere would be necessary to excite it where the local causes and predisposition were less disposed to give origin to the worst forms of fever; and that it might fail to appear where these essential circumstances were absent. The Plague of 1665, in its commencement and progress in England, renders this view at least as probable as that based on the story of contagion, smuggled through the restrictions of quarantine, in the shape of bags of wool. It began in London, and, according to Dr. Hancock, soon after in Southampton. It took a deliberate time to pass from one part of the city to another, declining in one as it appeared in the other; suddenly lost its virulence and contagious property, and died away at least as an epidemic in November, after having extended to the neighbouring towns. Heberden says, p. 80, in 1665, every town within twenty miles of London was more or less infected, and most of the principal towns in England, besides some parts of Ireland. In the next year it passed generally over the island, as if in all parts there had been similar causes existing to favour it; but Oxford, which had had constant intercourse with London, from the Court residing there, remained exempt from its visitation. Dr. Plot, in his History of Oxfordshire, affords this remarkable

testimony, and describes the health of the town to improvements made in it a century and a half previous to 1665. He assigns as causes of its general improved health, the enlargement of the town, the inhabitants being less crowded, the care of the magistrates in keeping the streets free from filth, the cleansing of the rivers, and the cutting of trenches for the drainage of the waters. "Formerly," he says, "they used to kill all manner of cattle within the walls, and suffer their dung and offal to lie in the streets. The Isis and Cherwell, through the carelessness of the townsmen, being filled with mud, and the common shores by such means stopped, did cause the ascent of malignant vapours whenever there happened to be a flood. But since that, by the care and at the charge of Richard Fox, bishop of Winchester, in the year 1517, those rivers were cleansed and more trenches were cut for the water's free passage, the town has continued in a very healthful condition, and in a particular manner so free from pestilential diseases, that the sickness in 1665, which raged in most parts of the kingdom, never visited *any person* there, although the terms were there kept and the Court and both Houses of Parliament did there reside*."

"What was done in Oxford as early as 1517 to remedy its unhealthiness, appears," says Dr. Hancock, "to have been done in London and the principal cities of England since the time of the last

* Plot's History of Oxfordshire. Quincy, Causes of Pestilential Diseases: London 1720, p. 235. Hancock, Researches into the Laws of Pestilence: London 1821, p. 221. Heberden, however, says the Plague was in Oxford in 1625.

Plague ;" and how far the local contaminations of air in cities aggravate the different forms of Marsh fever, is sufficiently apparent from the general contrast of the epidemic on the seaboard and in the interior of America.

The advocates of contagion admit the influence of this local contamination of air ; but they consider it only as a secondary cause, while their opponents esteem it the primary one. The one class of disputants regards it as an essential condition, as a sort of receptacle for the contagion of Plague, like a bed of manured earth for the reception of seed, and when the germ of the disease is planted, it takes root and grows to maturity ; and they seize hold of any incident that may afford a shadow of evidence in favour of the transport of the original embryo. The other considers this accidental transplantation of contagious matter as purely hypothetical, insusceptible of proof, and unessential to the origin and diffusion of the disease, which springs naturally out of local contaminations of air, aggravated in their effects by atmospherical distemperature, and affecting those principally whose situation and condition invariably render them obnoxious to all the forms of malignant fevers ; that Plague is the ultimate effect of the predisposing and remote causes of these fevers, which, from previous manifestations, have shown an increasing virulence, till they are lost in the symptoms which constitute true pestilence.

Hodges *, though a strenuous advocate of conta-

* *Loimologia*, by N. Hodges, M.D. Edited by J. Quincy, M.D. London 1720.

A Collection of very valuable and scarce Pieces relating to the

gion, admits that Plague may arise spontaneously in the body ; that it is communicated through the medium of the air : and he affords full evidence of its being generally accompanied by fever of a remittent type, and that, if contagion be essential to its rise, the most unreserved intercourse with the sick in the decline of the epidemic is not capable of extending the disease.

It will be seen by an inspection of the tables, that Plague existed in London nearly every year from 1603 to 1679, and that the deaths from it varied extremely. Heberden supposes that there is room to doubt whether the cause of the trifling mortality from it in some of the years has not been misrepresented ; but though this might be suspected in the earlier bills, it can hardly be admitted in those after the great Plague years, from 1625 to 1636, and 1665.

Hodges probably refers to these sporadic cases of Plague (*Loimol.*, p. 123,) when he speaks of a "*private pestilence*," in which, "without help from external contagion, not only a poisonous seminium may be generated, but carbuncles also may break out, from the peculiar caustic quality of saline qualities in the body. If this can be done in a private pestilence, what may we not expect from a pestilence that is the consequence of an epidemic cause, for the additional assistance of a more powerful saline principle from without cannot but greatly actuate the animal juices, and induce a compound

Plague of 1665 ; containing a Letter from Dr. Hodges to a person of quality, dated May 8, 1666, and Reflections on the Bills of Mortality. 2nd edit. 1721.

malignity, abundantly sufficient for the production of pestilential carbuncles."

At p. 32 he says, "the Pestilence is a disease arising from an *aura* that is poisonous, very subtle, deadly and contagious, affecting many persons at the same time together in one country, chiefly arising from a corruption of the nitrous spirit in the air; and the air is the fit medium for the propagation of Plague" (p. 42). "The infection of the pestilential poison is transferable by mediate or immediate contact;" and he conjectures "the pestilential seminium to be hid secretly in the porosities of the air, and to be conveyed from one country to another, and to travel unperceived into very distant regions." "As this medium is more still, it is so much the more capable to receive the pestilential infection, whereupon places that are close, confined, dark, as prisons, houses in valleys, are much more liable to contagion than eminences, where the air is frequently agitated by winds." (p. 55.) "Pestilence," he adds, "is the most notorious of all popular diseases, and depends upon some cause equally common and in every respect adequate to its extensive effects." In speaking of the Plague of 1665, he contents himself with remarking, "As to its origin, this we have from the most irrefragable authority, that it first came into this island by contagion, and was imported to us from Holland in packs of merchandize; and if any one pleases to trace it further, he may be satisfied, *by common fame*, it came thither from Turkey in bales of cotton or silk." (p. 29.)

At what period this merchandize was landed we

are not informed; but the Plague; which had existed in London at least every year since 1640, "discovered," according to Hodges, "the beginning of its future cruelties about the close of 1664, for at that season two or three persons died suddenly in one family at Westminster. Hereupon some timorous neighbours removed into the city of London, who carried along with them the pestilential taint, whereby the disease, which was before in its infancy, suddenly got strength and spread abroad." Hodges admits that "the hard frost which set in in December, and continued three months, seemed greatly to deaden the contagion, and very few died that season, though it was not extinguished, for in the middle of the Christmas holidays I was called to a young man in a fever, who after two days' course of alexiterial medicines, had two risings about the bigness of a nutmeg broke out, one on each thigh, though by God's blessings the patient recovered. Upon the frost breaking, the contagion got ground, and gradually got out of its confinements. The infection had long doubtfully reigned, and continued through May and June with more or less severity, sometimes raging in one part and then in another: as often as the funerals decreased, great hopes were conceived of its disappearance; then on a sudden again their increase threw all into dejection; which uncertainty gave advantage to the distemper, because persons were more remiss in their provisions against it during such fluctuations. But all endeavours to restrain the contagion proved of no effect, and it is incredible to think how the Plague raged amongst the common people, insomuch that it came by

some to be called the *Poor's Plague*. In September the disease was at its height; then, the worst part of the year being over, it by leisurely degrees declined as it had gradually made its advances, and before the number infected decreased, its malignity began to relax, insomuch that few died. After some time, a dawn of health appeared as sudden and unexpected as the cessation of the following conflagration. The pestilence, however, *did not stop for want of subjects to act upon*; but from the nature of the distemper, its decrease was, like its beginning, moderate. About the close of the year or the beginning of November, people grew more healthful, and such a different face was put upon the publick, that, although funerals were yet frequent, many who had made most haste in retiring, made the most to return, and came into the city without fear, insomuch that in December they crowded back as thick as they fled. The houses, which before were full of the dead, were now again inhabited by the living, and what is almost beyond belief, those citizens who before were afraid even of their friends and relations, would without fear venture into the houses and rooms where infected persons had a little before breathed their last. Many went into the beds where persons had died, before they were even cold, or cleansed from the stench of the deceased. The next spring, indeed, some remains of the contagion appeared, which was easily conquered by the physicians, and, like the termination of a common Intermittent, ended in a healthful recovery." (p. 1—25.)

"The manifest signs of infection are horror, vo-

miting, delirium, dizziness, head-ache, stupefaction, followed by fever, watching, palpitation of the heart, bleeding at the nose, great heat about the præcordia; and the signs more peculiar to a pestilence are those pustules which the common people call *blains*, *buboes*, *carbuncles*, *spots* and *tokens*. After the pestilential miasmata have seized a person, a train of symptoms proceed, of which quaking or shuddering is the chief, all of a sudden, without any manifest cause. The duration of it was as uncertain as its degree; half an hour or four or five hours. As soon as this horror could be said to terminate, commonly a nauseousness and reaching succeeded, and grievous vomitings. After the principal load of humours at the stomach are thrown up, a very frothy bile, fermenting like yeast, follows, greenish and fetid. All the sick quickly after seizure grew delirious, running wildly about the streets. Many were seized with a vertigo, and a head-ache so vehement, as if the parts would have flown asunder; a complaint the most intolerable of all, because it continued without any remission or intervals: many were taken with a coma, and in the middle of their employ would suddenly fall into profound and often deadly sleeps.

“A fever was a constant attendant, though the infection seemed to kill some before the blood and juices could rise into fermentation. But this fever was in some very low and concealed, though in others it appeared openly and the contagion discovered signs apparent enough of its presence, as extreme inquietude, a most intense heat outwardly, with un-

quenchable thirst within, dryness and blackness of the tongue, intolerable heat of the præcordia, and all other usual concomitants of a fever's accession."

"As to the fever's exacerbations and remissions, it appeared by constant experience that sometimes they were erratic and changeable, at others continued without any intervals; and it was also customary to meet with some that wholly remitted for eight, ten, or twelve hours. The alternations likewise of heat and cold were very various, and with some would change several times in an hour; and with others the periods would be at much greater distances; so also the recurring accessions were sometimes milder and at others more severe. Those who with great difficulty went through the first paroxysm, could bear the second with ease, as being much milder, whereas the third or fourth accession would be with intolerable vehemence and fury: at other times the first fit would be gentle and the subsequent very severe and intense; and truly such was the uncertainty and disguise of this insidious enemy that nothing could be prognosticated of its attacks or cruelty." (p. 87—100.)

At p. 49 he says, "Persons frequently died without any preceding symptoms of horror, thirst, or concomitant fever. Yet for the most part some fever did show itself, and the fever accompanying this present sickness was of the worst kind, both on account of its state and periods, sometimes imitating a Quotidian, and at others a Tertian; sometimes seeming to retreat, and at others attacking again with redoubled fury. There was never a total ces-

sation; but sometimes a remission for an hour or two, although every exacerbation was worse than the former."

In his letter, he says, "I must ingenuously confess that, except in those who suddenly died, I met not with any one patient free of a fever. In relation to the paroxysms, it is most certain that generally there was some kind of remission, so that the patients could easily find their condition altered thereby; but the fits were altogether irregular and uncertain; however they seemed in some much to resemble a double Tertian. . . . I never could in any one single instance find the least impressions of corruption in the blood, which commonly appeared more florid than at other times. Though some were buried in sleep, others kept continually waking, and the most remarkable symptom of this class is the palpitations of the heart. Sweat sometimes breaks out in profusion, variously coloured, of citron hue, purple-green, black, or like blood; in some fetid and intolerable, or sharp and caustic. Sometimes cold sweats would break out while the heat raged inwardly and excited unquenchable drought: some continued in a profusion of sweat till life exhaled with it, while others had short intervals of truce; nay, some sweat on one side while the other was quite parched with dryness. But the benefit of this evacuation, when it was regular, was so manifest, that all who recovered were sensible of it.

"Hæmorrhage of the nose happened much more often from the colliquative nature of the poison and erosion of the vessels, than from a plethora; and many other symptoms might be enumerated which

commonly attend this pestilential fever, as heat of the præcordia, hiccup and gripings.

“The vesications called *Blains* used commonly to rise with an exquisite shooting pain, containing a serous humour or ichor, of a yellowish colour, and encompassed with a variegated circle, generally reddish. They break out in many parts, few or many, as small as a pea or the size of a nutmeg. The included matter was saline or caustic; for very soon after its eruption it would corrode its vesicle, and burst out of a yellowish, livid, or black colour. The surrounding circle was not always of the same appearance, though at first coming out it was continually inflamed. Sometimes these vesicles broke out without any other previous indication of infection, and, as I imagine, from the expeditious separation of the pestilential venom, and the sudden conquest of the distemper by a strong constitution*. But whensoever the pain and heat of the part was so aggravated that no proper applications would assuage it, there was commonly danger of a mortification from so great a concourse of pestilential particles together; and once I remember a vesicle to change into a carbuncle.

“Buboes are hard and painful tumours, with inflammation and gathering upon the glands, behind the ears, armpits, or groin. The more pus was obtained from their suppuration, the patient was the better for it. The number was uncertain; sometimes one, most commonly two broke out at once, and there were instances wherein all the glands capable of it were tumefied. The places and manner of

* See Cleghorn, on the Essere, or Urticaria.

their eruption were uncertain ; sometimes one in the right axilla, and another on the contrary side of the groin ; they would sometimes last but a day, and again insensibly vanish, that is, always when profuse sweat arose, but whensoever they were drawn in again, they would appear and vanish again many times, and be very difficult after to be fixed ; and sometimes when they could be brought to suppuration they would renew again." In his letter he says, "They were most commonly an effect of the second sweat, promoted by proper alexipharmical remedies. Some were indolent and hard, continuing many months, notwithstanding means to discuss or suppurate them."

"Carbuncle is a small eruption whose contents are soon discharged. After which it appears in a crusty tubercle, about the bigness of a millet seed, gradually spreading, and encompassed with a red fiery circle. At first there is a sharp pricking pain on the part, which grows very hot and forms a blister, containing a thin ichor, which breaks and leaves an eschar, more or less broad, red, dusky, livid, or black.

"The pestilential spots, or Petechiæ, are deeper coloured than in a malignant fever ; and chiefly come out in the neck, breast and back, disappearing and coming out again several times, red, purple, yellow, livid, or black ; always symptomatic and never critical.

"Tokens, so called as pledges or forewarnings of death, are minute distinct *blasts*, or little pyramidal protuberances, differing in hardness and colour, some callous and horny : their colour and affinity

with *warts* is also remarkable, sometimes as small as a pin's head or as broad as a silver penny, depressed or prominent; some did not appear till after death. How much soever these were the sure forewarnings of death, they would sometimes be out from the fourth day before as terrible admonitions." In his letter he says, "to the touch they seem hard, not unlike little kernels under the skin, the superficies being smooth. I saw one where these tokens put out with little blisters upon them. Many were puzzled to distinguish between them and Petechiæ and Scorbutic spots. The neck, breast, back and thighs are most apt to them."

Hodges says, "These blasts were derivable from external causes, as injuries of the air where the pestilential miasmata were pent up and condensed and increased in virulence to that degree that life was immediately extinguished upon coming within their reach;" and he recommends that "the streets, sinks and canals should daily be cleared of all filth, because stench and nastiness are justly reckoned the entertainers of infection, and we find the air to be corrupted frequently from noisome smells, so that the pestilential venom cannot but receive additional strength from such means."

"The opinion that the pest invades no person a second time, is plainly confuted by too many experiments during this sad visitation. I have known many who, though all things succeeded well the first and second time, yet the third seizure from a new infection, and not a relapse, hath proved fatal to them. Some this last year fell the 5th and 6th time, being before very well recovered." (Letter.)

In speaking of the diffusion of the Plague, he says, (*Loimol.*, p. 25,) "The contagion spread its cruelties into the neighbouring countries; for the citizens, who crowded in multitudes into the adjacent towns, carried the infection along with them, where it raged with equal fury. The towns upon the Thames were most severely handled, not perhaps from a great moisture in the air from thence, but from the tainted goods rather that were carried upon it. Moreover, some cities and towns of the most advantageous situation for wholesome air did notwithstanding feel the common ruin."

The above is the sum of Hodges's report of this memorable epidemic. It is much to be regretted that he has left us no account of the *Spotted fever* and of the *Ague and fever*, the deaths from which in 1665 were to those of Plague as 7186 to 68,596, or 1 to 9½.

With the exception of those cases which were suddenly fatal, it is evident that a Remittent fever, resembling in some degree a Quotidian, a Tertian, or double Tertian, was apparent in all the cases; and we recognise many of the symptoms of Marsh fever, besides this irregular type, as will be apparent by a reference to the observations hereafter of Torti, Cleghorn, Louis, and the Irish physicians. In the blains and tokens we have the modern Essere, (*Urticaria*,) and the Rash, (*Lichen*,) and Sudamina of Louis; and though the bubo and carbuncle are considered as the essential characteristics of Plague, it will be seen from the testimony of Russell that they do not constitute the most formidable symptoms of the disease, and that they are not always

present. The parotid is not only common to the pernicious fevers of Italy, but to the Typhus of this country, in which also the bubo and carbuncle, on the faith of Mead, Huxham and Bateman, are sometimes met with.

These external affections, however, are eminently characteristic of Plague; but it is questionable how far it is legitimate to avail of them, to make it a disease *sui generis* depending on a foreign contagion. If Typhus, according to Louis's view, be a disease essentially characterized by an ulceration of the glands of Peyer, and an enlargement of those of Brunner, with a highly hypertrophied and diseased state of the mesenteric glands, and depending on local taints of atmosphere for its origin, I see no unreasonableness, from the evident analogy between it and Plague, in imagining that a more highly concentrated cause, or a peculiar state of predisposition, should operate in the latter disease with more intensity on the dermoid tissue, and produce on the surface effects more decided than are generally met with in Typhus of a remittent or continued type. The hypothesis of imported contagion, which is so ineffectually insisted on to account for Plague, is not plausible enough to explain all the difficulties attending the disease and its associated malignant fevers; and there are so many analogies between Plague and Marsh fever, that when we see the last deepening in malignity and prevalence from endemic causes, it is a very forced construction to assume the sudden and adventitious operation of a foreign cause to carry it on to the grade of the first.

To show that the progress of Plague in 1665 in

London was analogous to that of Typhus in 1817, that it obeys the same general law of season, and that there are considerations which afford strong circumstantial evidence in favour of its indigenous source in this country and against the hypothesis of foreign contagion, I shall adduce some facts from Hancock and from the Bills of Mortality.

Dr. Hancock's* facts illustrative of the progress of the Plague I shall state briefly, to show that if the importation of contagion from Holland at the close of 1664, into the parish of St. Giles, be essential to account for the appearance of the disease there, it is remarkable that the disease itself, with all its contagious properties, taken to other parts of the metropolis, did not spread equally, but prevailed in some parts as it was declining in others, which accords with what Bateman states of the progress of Typhus in 1817.

"H. F. says, that the city and suburbs, at the beginning of the epidemic, (the wars being over, the armies disbanded, and the monarchy restored,) were computed to have above 100,000 inhabitants more than it ever had before ; some said twice as many."

Hodges notices a great mortality among the cattle in the wet autumn of 1664, whereby their carcasses were sold for a very mean price ; but he adds, the eating of them could not be supposed to extend to so universal an effect as Plague. He speaks of "a monthly fast for public prayers, which did not prove in vain, for the whole summer was refreshed with moderate breezes, sufficient to pre-

* Researches into the Laws of Pestilence ; by Thomas Hancock, M.D. London 1821, p. 52, &c.

yent the air's stagnation : " though Hancock quotes Baynard to a very opposite effect, viz. that "during the Plague, there was such a calm and serenity of weather, as if wind and rain had been banished the realm ; for many weeks together I could not observe the least breath of wind, not enough to stir a weathercock : if any, it was southerly."

Hooke, in a letter to Boyle, says, " I cannot, from any information I can learn, judge what the cause (of the Plague) should be, nor can I imagine it to be in the air, though there is one thing which is very differing from what is usual in *other very hot* summers, and that is a very great scarcity of flies and insects, not a tenth part of what I have seen other years : at London this is most manifest."

In the last of November or beginning of December 1664, two Frenchmen died of Plague in Drury-lane, St. Giles's; and about three weeks after, another man died in the same house of the disease. Hodges saw a young man (before alluded to) in the middle of the Christmas holidays. About the 12th of February 1665, another died in the same parish : and "from the time the Plague began in St. Giles's, the burials from other diseases increased considerably in number in that and all the adjacent parishes ; for while there was no mention of the Plague in the weekly bills, and no increase for a time after it had been mentioned, yet it was apparent there was an increase of those distempers which bordered upon it ; for example, there were 8, 12, 17 of the Spotted fever in a week, and none or but very few of the Plague ; whereas before, 1, 3, 4 were the ordinary weekly numbers of that distemper : and the burials

increased weekly in that parish and the parishes adjacent, though there were none set down of the Plague."

"It was not till the beginning of May that a case of death, or even infection, was reported within the walls of the City. This occurred in Bearbinder-lane, in a Frenchman, who, having lived in Long Acre, near the infected houses, had removed for fear of the distemper. Till the second week of June, nearly seven weeks after, the City continued free, there having never died any of the Plague except that one Frenchman within the whole ninety-seven parishes. Southwark was entirely free, not one having died yet on that side of the water. But now there died one in Wood-street, one in Fenchurch-street, and two in Crooked-lane, within the City. The weather had just set in hot, and from the first week in June the mortality increased in a dreadful manner. The second week in June, St. Giles's, where still the weight of the distemper lay, buried 120, whereof 68 of the Plague. The mortality soon increased to double and treble that amount, till, about the middle of July, the disease, which had chiefly raged in the parishes of St. Giles, Andrew, and Stephen, and towards Westminster, came to its height there, and began to travel eastward. It did not come straight on towards the east, for the City was pretty healthy still: for though there died that week 1268 of all distempers (300 was the usual weekly number), whereof it might be supposed above 900 died of the Plague, yet there were but 28 in the whole City within the walls, and but 19 in Southwark, including Lambeth parish; whereas in

the parishes of St. Giles and St. Martin-in-the-Fields alone, there died 421. But the disease kept chiefly in the out parishes, which being very populous and fuller of poor, the distemper found more to prey upon than in the City: and it approached the east by Clerkenwell, Cripplegate, Shoreditch and Bishopsgate, which last two parishes joining to Aldgate, Whitechapel and Stepney, the disease came at length to spread its utmost rage in those parts, even when it abated at the western parishes where it began. It was a merciful disposition of Providence, that as the Plague began at one end of the town first, so it proceeded progressively to other parts, and did not go eastward till it had spent its fury in the west; and so as it came on one way it abated another, for the northern parishes were next visited before it fell on the City: and the same proportion was observed in the increase and decrease of the weekly bills, under the head of *other diseases*, between these parishes and the eastern, as between the northern and St. Giles's: so it was between the City and the East and Southwark; in which latter places they flattered themselves they should remain secure, for a long time after the mortality was very considerable in other parts. Yet it did not reach to the eastern parts, to be violent, till the beginning of August.

“ But the latter end of July it increased prodigiously in Cripplegate, St. Sepulchre's, St. James's, Clerkenwell, St. Bride's and Aldersgate; and while it was in all these parishes, the City and all the parishes on the Southwark side of the water, and all Stepney, Whitechapel, Aldgate, Wapping and Ratcliffe, were very little touched. Even when the north

and north-west suburbs were fully infected, viz. Cripplegate, Clerkenwell, Bishopsgate and Shore-ditch, yet still all the rest were tolerably well. From July 25 to August 1, there died more of all diseases in Cripplegate and St. Sepulchre's by 48, than all the City, all the east suburbs, and all the Southwark parishes put together; and this continued till the latter end of August. But then the case was quite altered. The disease abated in the west and north-west parishes, and the weight of it lay in the City, and the eastern suburbs, and the Southwark side. About the 10th of September the disease came to its height. The City and other parts where the weight of it now lay were notwithstanding exceedingly crowded, and perhaps the more so, because people had for a long time a strong belief that the Plague would not come into the city, nor into Southwark, nor Wapping nor Ratcliffe, at all. It now killed in two or three days, and not above 1 in 5 recovered. But after this period, when the disease was on its decline, it did not kill under eight or ten days, and not above 2 in 5 died. It was calculated in the last week in September that not fewer than 60,000 were infected, of whom near 40,000 recovered; for the Plague being come to its crisis, its fury began to assuage, and the Bill decreased almost 2000 that week. Just then it pleased God to disarm this enemy. Nor was this by any new medicine, or new method of cure; the disease was enervated and the contagion spent. Even the physicians were surprised; wherever they visited they found their patients better; they had sweated kindly, or the tumours were broken, or the car-

buncles went down, and the inflammation round them changed colour, or the fever was gone, or the violent head-ache assuaged, or some good symptom was in the case, so that in a few days whole families that expected death were revived and healed, and none died at all out of them. Those who had recently arrived from the country were then the chief sufferers. Upon the notion spreading that the disease was not so contagious as formerly, and not so mortal, the people grew so regardless that they made no more of the Plague than of an ordinary fever, nor indeed so much, and went boldly into company with those who had buboes and carbuncles upon them, ate and drank with them, and into their very chambers and beds where they lay sick. The physicians at first opposed this thoughtless humour of the people, but it was to no more purpose to talk to them than to an east wind; for they opened shops, did business and conversed with anybody that came in their way; and though many escaped, yet many died. We were no more afraid to pass a man with a white cap upon his head, or a cloth wrapt round his neck, or with his leg limping, all which were frightful to the last degree but the week before." Yet Hodges says the pestilence did not stop for want of subjects to act upon.

"It was at its height in the West about the middle of July, in the North about the middle of August, in the City and Southwark the middle of September, and scarcely till October in the extreme parishes of the East; from which it appears to have spread to the towns in Essex late in the autumn, and to have revived in the spring of 1666.

“In spite of all the caution, there was not a town of any note within ten or twenty miles of the City but what was more or less infected ; some parts as violently as London had been. Norwich, Peterborough, Lincoln, Colchester, indeed, first and last, all the considerable places in England, were visited more or less ; and Ireland in some places, but not so universally. Oxford escaped, though, in consequence of the Court and Assizes being held there, a constant intercourse was maintained with the metropolis. Hooke, in a letter to Boyle, mentions that the disease was laying waste Southampton as early as July 1665.”

The following Tables are too important to be omitted in an inquiry of this kind.

Table I. shows the annual amount of burials and of deaths from Fever and Bowel complaints from 1629 to 1830; by which it will be seen that Plague ceased to be recorded after 1679; Spotted fever after 1728; Gripping of the Guts after 1734; and the *Bloody Flux* after 1788. Considering these two classes of diseases as allied to each other, it is remarkable how the more formidable modifications first decreased in number, and then melted into the milder forms of disease. The Plague would seem to have passed through Spotted fever, Ague and fever, into common Typhus, and an inconsiderable and disproportionate number of Intermittents, distinguished from fever; the *Bloody Flux* to have equally decreased in number, and to have passed into common Diarrhœa; and Gripping of the Guts to have passed into Colic and Wind. The improvement in the health of the capital in modern times is evident, and I know of no explanation

more probable than that of the improved system of drainage, and the copious supply of water which renders it so effectual. In this respect London presents a strong contrast to Paris ; a circumstance, perhaps, connected with the different fate of the two capitals during the late epidemic Cholera.

Table II. shows the *annual average* of Fever and Bowel complaints from 1650 to 1830, taken every ten years. Since 1760, the decrease of fever has been progressive from 3423 to 932 annually, a mortality very inconsiderable, considering the amount and the quality of the population. Bowel complaints have steadily decreased since 1670, and the disproportion in modern times, 20 to 2966, is certainly a most remarkable fact. Heberden justly insists upon this as an evidence of an endemic cause of disease during the seventeenth century, when Plague was almost annually present in London, from 1603 to 1679. I had intended to have offered his cogent reasoning on this subject, but I shall content myself with referring to his valuable paper *. It is singular to observe the state of his mind and that of Hancock, after their investigations into the probable origin and progress of Fever, and to contrast their evident doubts and cautious inferences with the dogmatical assertions of those who take no trouble to inquire into the subject. It is very evident that both these excellent men more than doubted of the introduction of any foreign contagion as a cause of Plague; which even if admitted to be possible, on the shallow evidence that is brought in its support, cannot account for the pre-

* Observations on the Increase and Decrease of different Diseases, by W. Heberden, Jun., M.D. London 1801.

vions existence and the simultaneous increase of other diseases, to say nothing of the absence of any new importation since 1679, notwithstanding the notorious frequency of Plague in the East, and the constant and increased communication with it, especially of late years, since cotton has become an article of import from Egypt. If quarantines have saved us, how comes it that Plague has never appeared in those establishments? and if contagion could act as the cause of an epidemic, why was not the tragedy of 1593, 1603, 1625, 1636, and 1665 acted over and over again, especially in years when there died in London from 600 to 4240 of Plague?

Hancock shows, by the following Table, that the disease was not confined to one quarter, even when the deaths were commonly few; and, consequently, when they exceeded a thousand, it must have been spread widely over the City.

	Parishes infected.	Died of Plague.
1661	5	20
1662	4	12
1663	5	9
1664	4	6
1665	130	68,590
1666	104	1998
1667	14	35
1668	6	14
1669	3	3
1671	3	5
1672	5	5
1673	5	5
1674	1	3
1676	2	2
1677	2	2
1678	3	5

The greatest mortality from Plague in 1593, 1603, 1625, was in August; in 1636, 1665, in Sep-

tember ; in 1606, 1608, in October : and the mortality of Fever and Bowel complaints rose and fell with it. Thus, in 1665,

	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.
Plague	43	590	6137	17036	31159	9444	3449	734
Spotted fever	53	62	378	686	483	136	27	14
Fever	133	193	619	1398	1474	451	235	90
Griping	74	109	197	288	202	61	38	17

These facts clearly connect Plague with the common fever of this country, as will be seen by a reference to the observations of Willan hereafter ; and Table III. may be compared with those of the Irish Tables of the fever in 1817, especially with reference to the rise and fall occasionally of the disease in the two periods. The irregular mortality of Plague in 1647 is in accordance with that of Typhus in 1817, and I could have selected other years of Plague to show the same analogy.

That Plague in those years in which the mortality was trifling was but the peculiar aggravation of the ordinary fever of London, is, I think, apparent from the limited amount of the disease. In speaking of the pernicious fevers of Italy, as described by Torti, I have remarked, that the peculiar cases of aggravation which are met with in any one epidemic are sometimes found to predominate in particular epidemics ; and Plague is a proof of the fact, for, like the occasional examples of Yellow fever, of Dysenteric and Choleric fever, scattered in sporadic cases through epidemics generally of a common remittent character, we find equally sporadic cases of Plague in the epidemics of the fevers of this coun-

try; and occasionally these diseases at other times predominate over all other forms, and the ordinary fevers are then the exceptions to the prevalent Yellow fever, Dysentery, Cholera, or Plague. Upon what this depends it is impossible to surmise; though I see no difficulty in conceiving, that if the ordinary causes of fever can produce scattered examples of Yellow fever or Plague in some years, they may produce them generally in others, without the necessity of resorting to the forced supposition of an imported contagion. This, I think, must be abandoned with respect to Yellow fever and Typhus; and I cannot see how, consistently, it can be maintained with respect to Plague; nor can I imagine that the doctrine of a contagion *sui generis* is applicable to either of the diseases.

The peculiar state of the cause of fever, or of the predisposition of the individual, may be limited to a few or common to many, so that the requisites for the production of Plague may exist occasionally in one or twenty, or in thousands. Humboldt, in his Political Essay, p. 171, in reasoning upon Yellow fever, would seem to throw the liability to the peculiar form of disease on the existing predisposition, acted upon by the remote cause of fever. "It is probable," he says, "that under the same parallel, the gaseous emanations which produce the same diseases are almost the same; but that a slight difference is sufficient to throw disorder into the vital functions. I have shown by a long series of experiments, in which the galvanic excitations serve to measure the state of irritability of the organs, that chemical agents excite the nerves not

only from the qualities which are peculiar to them, but also from the *order* in which they are applied after one another."

This subject is one of extreme difficulty; but that the condition of the individual modifies the action of the essential cause of fever is apparent, and I see no more anomaly in the symptoms of Plague appearing in one, and of Spotted fever or Remittent fever in others, than exists in the fact recorded by Bateman, of a man and his wife, taken in 1817 together to the House of Recovery; he under the mildest symptoms of fever, which scarcely confined him to bed; while she was lying in a state of stupor, covered with petechiæ and vibices, and exhibiting all the most formidable symptoms of the worst form of Typhus.

Hancock, p. 77, in alluding to the existence of Plague in London in several parishes, when the mortality was confined to a few persons, says, "That the Plague, though constantly present in different quarters, was usually as limited in its range as our mildest contagious fever of the present day; and though London was for so many years harbouring the disease, and under circumstances to favour the diffusion, it seldom happened that a general pestilence ensued. If it was the same disease as the Plague of the Levant, that so frequently from year to year was lurking harmlessly in the very heart of the metropolis, upon what sound principle do we fortify our coasts with such formidable barriers against it, when the circumstances of our cities are so entirely changed?"

TABLE I.

Annual Amount of Deaths from Plague, Fever, and Bowel Complaints; taken from the London Bills of Mortality.

Years.	Burials.	Plague.	Spotted Fever.	Ague and Fever.	Bloody Flux.	Colic and Wind.
1593	25886	11503				
1603	37294	30561				
1604	....	896				
1605	....	444				
1606	7920	2124				
1607	8022	2352				
1608	9020	2262				
1609	11785	4240				
1610	9087	1803				
1611	....	627				
1612	....	64				
1613	....	16				
1614	....	22				
1615	....	37				
1616	....	9				
1617	....	6				
1618	....	18				
1619	....	9				
1620	....	2				
1621	....	11				
1622	....	16				
1623	....	17				
1624	9310	6				
1625	54265	35417				
1626	....	134				
1627	....	4				
1628	....	3				
1629	10554	0	32	956	449	48
1630	10471	1317	58	1091	438	57
1631	8468	274	58	1115	352	
1632	9559	8	38	1108	348	
1633	8423	....	24	953	278	
1634	10865	1	125	1279	512	
1635	10641	....	245	1622	346	37
1636	23359	10400	397	2360	330	50
1637	11763	3082				
1638						
1639						
1640	12771	1450				
1641	18291	3067				
1642	12167	1824				
1643	13202	996				
1644	10933	1492				

Table I. (continued).

Years.	Burials.	Plague.	Spotted Fever.	Ague and Fever.	Bloody Flux.	Gripping of Guts.	Colic and Wind.
1645	11479	1871					
1646	13532	2436					
1647	14059	3597	145	1260	155		103
1648	9906	611	47	884	176		71
1649	10532	67	43	751	802	....	85
1650	9081	15	65	970	289	1	82
1651	10753	23	54	1038	833	....	76
1652	12541	16	60	1212	762	110	102
1653	9079	6	75	282	200	32	80
1654	12126	16	89	1371	386	....	101
1655	11409	9	56	689	168	87	85
1656	13750	6	52	875	386	315	120
1657	15046	4	56	997	362	446	113
1658	17951	14	123	1800	233	313	179
1659	17584	36	368	2303	346	253	116
1660	15118	14	146	2148	251	402	167
1661	19771	20	335	3490	314	1061	186
1662	16554	12	148	2601	203	835	142
1663	15356	9	128	2107	192	866	115
1664	18297	6	116	2258	296	1146	120
1665	97306	68596	1929	5257	185	1288	134
1666	12738	1998	141	741	82	676	32
1667	15842	35	96	916	94	2108	54
1668	17278	14	148	1247	86	2415	55
1669	19432	3	114	1499	165	4385	59
1670	20198	....	121	1729	142	3690	100
1671	15729	5	77	1343	86	2537	84
1672	18230	5	112	1615	127	2645	99
1673	17504	5	144	1804	70	2624	87
1674	21201	3	285	2164	188	1777	133
1675	17244	2	156	2154	108	3321	126
1676	18732	1	143	2112	63	2083	120
1677	19067	2	155	1749	150	2602	143
1678	20678	5	204	2376	55	3150	161
1679	21730	2	160	2763	61	2996	133
1680	21053	....	193	3324	68	3271	127
1681	23971	....	199	3174	116	2827	105
1682	20691	....	140	2696	55	2631	76
1683	20587	....	148	2250	68	2438	70
1684	23202	....	139	2836	33	2981	69
1685	23222	....	333	3832	47	2203	51
1686	22609	....	314	4185	47	2605	38
1687	21460	....	144	2847	26	2542	36
1688	22921	....	139	3196	26	2393	25
1689	23502	....	129	3313	20	2804	51
1690	21461	....	203	3350	23	2269	51
1691	22691	....	193	3490	21	2511	33

Table I. (continued).

Years.	Burials.	Spotted Fever.	Ague and Fever.		Bloody Flux.		Gripping of Guts.	Colic and Wind.
1692	20874	161	3205		21		1756	36
1693	20959	199	3211		18		1871	34
1694	24100	423	5036		25		1443	48
1695	19047	105	3019		10		1115	58
1696	18638	102	2775		13		1187	78
1697	20970	137	3111		16		1136	91
1698	20183	274	3343		25		1165	64
1699	20795	306	3505		21		1225	75
1700	19443	189	3676		13		1004	74
					Bloody Flux.			
			Ague.	Fever.	Flux.			
1701	20471	77	6	2902	6	6	1136	92
1702	19481	59	3	2682	4	5	1189	110
1703	20720	85	7	3162	6	5	985	104
1704	22684	75	6	3243	5	7	1134	133
1705	22097	53	3	3290	10	2	1021	132
1706	19847	63	2	2662	6	11	948	108
1707	21600	47	2	2947	4	6	883	103
1708	21291	78	4	2738	6	9	768	102
1709	21800	142	15	3140	20	4	812	107
1710	24620	399	10	4397	13	6	707	95
1711	19833	155	1	3461	9	1	614	99
1712	21198	119	8	3131	5	4	575	74
1713	21057	133	11	3039	7	4	581	82
1714	26569	179	4	4631	13	7	670	75
1715	22232	188	8	3588	19	4	589	73
1716	24436	140	2	3078	6	3	709	90
1717	23446	153	4	2940	12	10	653	109
1718	26523	158	10	3475	27	10	801	127
1719	28247	166	15	3803	18	21	826	174
1720	25454	82	15	3910	11	11	731	175
1721	26142	123	18	3331	10	12	697	117
1722	25750	45	9	3088	16	5	668	146
1723	29197	75	5	3321	9	5	910	130
1724	25952	108	4	3262	12	7	710	159
1725	25523	71	3	3277	6	8	563	97
1726	29647	96	6	4666	23	11	593	137
1727	28418	114	11	4728	24	16	517	134
1728	27810	104	44	4716	23	14	433	94
1729	29722	....	27	5235	21	17	446	91
1730	26761	....	16	4011	19	28	382	65
1731	25262	....	11	3225	17	25	288	64
1732	23358	....	10	2939	13	32	273	52
1733	29233	....	3	3831	10	12	258	74
1734	26062	....	6	3116	13	24	351	
1735	23538	....	6	2544	13	17	317	

Table I. (continued).

Years.	Burials.	Ague.	Fever.	Bloody Flux.	Flux.	Gripping of Guts, Colic and Wind.
1736	27581	1	3361	7	24	362
1737	27823	3	4580	7	19	338
1738	25825	1	3890	5	11	295
1739	25432	3	3334	9	10	280
1740	30811	6	4003	6	16	296
1741	32169	3	7528	20	31	258
1742	27483	8	5108	19	27	109
1743	25200	5	3837	7	23	136
1744	20606	6	2670	2	10	86
1745	21296	6	2690	15	34	135
1746	28157	15	4167	21	40	119
1747	25494	8	4779	6	28	160
1748	23869	9	3981	10	47	111
1749	25516	15	4458	7	38	148
1750	23727	11	4294	8	24	145
1751	21028	7	3219	3	21	114
1752	20485	2	2070	3	10	123
1753	19276	4	2292	5	5	128
1754	22696	4	2964	4	18	115
1755	21917	5	3042	6	8	81
1756	20872	6	2579	7	9	68
1757	21313	4	2564	6	6	64
1758	17576	1	2472	5	7	50
1759	19604	2	2314	10	9	66
1760	19830	9	2136	5	7	42
1761	21063	12	2457	9	15	60
1762	26326	8	3742	30	123	56
1763	26143	10	3414	12	40	37
1764	23202	8	3942	13	24	43
1765	23230	7	3921	7	12	45
1766	23911	15	3738	5	18	45
1767	22612	18	3765	4	16	54
1768	23639	5	3596	5	22	70
1769	21847	2	3430	3	7	55
1770	22434	8	3214	1	15	64
1771	21780	1	2273	..	8	48
1772	26053	2	3207	2	11	57
1773	21656	5	3608	3	13	44
1774	20884	9	2607	4	13	63
1775	20514	5	2244	3	9	70
1776	19048	6	1893	1	10	45
1777	23334	2	2760	1	10	39
1778	20399	5	2647	1	14	43
1779	20420	4	2336	2	32	52
1780	20517	9	2316	3	62	28
1781	20709	9	2249	14	55	29
1782	17918	5	2552	4	34	6

Table I. (continued).

Years.	Burials.	Ague.	Fever.	Bloody Flux.	Flux.	Gripping of Guts, Colic and Wind.
1783	19029	11	2313	5	23	37
1784	17828	8	1973	1	9	8
1785	18919	8	2310	4	11	15
1786	20454	6	2981	....	12	18
1787	19349	6	2887	1	7	6
1788	19697	7	2769	1	14	14
1789	20749	4	2380	....	17	9
1790	18038	3	2185	....	4	6
1791	18760	1	2013	....	5	9
1792	20213	6	2236	....	4	5
1793	21749	5	2426	....	10	14
1794	19241	4	1935	....	5	12
1795	21179	10	1947	....	12	8
1796	19288	6	1547	....	8	13
1797	17014	5	1526	....	10	4
1798	18155	8	1754	....	12	13
1799	18134	3	1784	....	5	8
1800	23068	2	2713	....	9	11
1801	19374	4	2908	....	10	8
1802	19379	2	2202	....	10	24
1803	19582	1	2326	....	9	19
1804	17038	2	1702	....	13	4
1805	17565	3	1307	....	4	12
1806	17938	13	1354	....	4	21
1807	18334	1	1033	....	8	14
1808	19954	5	1168	....	10	19
1809	16680	4	1066	....	9	15
1810	19893	5	1139	....	10	6
1811	17043	1	906	....	24	6
1812	18295	2	783	....	6	17
1813	17322	2	714	....	7	8
1814	19283	2	908	....	10	21
1815	19560	5	1309	....	65	26
1816	20316	3	1299	....	15	6
1817	19968	2	1299	....	9	7
1818	19705	1	1170	....	..	..
1819	19228	..	1093	....	13	2
1820	19348	..	1109	....	6	9
1821	18451	..	1101	....	5	5
1822	18865	..	1104	....	6	..
1823	20587	..	690	....	5	30
1824	20237	2	750	....	2	5
1825	21026	1	806	....	10	8
1826	20758	2	926	....	8	12
1827	22292	11	755	....	11	16
1828	21709	7	843	....	4	29
1829	23524	53	1167	....	4	31

TABLE II.

Average of Deaths from Fever and Bowel Complaints in London,-----

Years.	Ague and Fever.	Ague.	Fever.	Spotted Fever.	Plague.	Yearly Average.	Flux.	Bloody Flux.	Gripping of the Stom.	Colic and Wind.	Yearly Average.
1650 to 1660	11537	.....	.....	998	145	1968	.....	3965	1587	1054	657
1660 — 1670	22264	.....	.....	3271	70707	9624	.....	1668	15182	1064	1811
1670 — 1680	19609	.....	.....	1557	30	2139	.....	1050	27425	1166	2966
1680 — 1690	31653	.....	.....	1878	.....	3353	.....	506	26695	648	2785
1690 — 1700	34045	.....	.....	2103	.....	3614	.....	193	15678	568	1644
1700 — 1710	.....	48	20442	868	.....	3135	55	80	9880	1065	1106
1710 — 1720	.....	73	35543	1790	.....	3740	70	199	6725	998	792
1720 — 1730	.....	142	39534	818	.....	4049	106	165	6253	1960	779
1730 — 1740	.....	60	34831	.....	.....	3489	302	113	1901	2198	371
1740 — 1750	.....	81	43221	.....	.....	4230	394	113	.....	1558	196
1750 — 1760	.....	46	27810	.....	.....	2785	117	57	.....	954	118
1760 — 1770	.....	94	34141	.....	.....	3423	284	93	.....	507	88
1770 — 1780	.....	47	26788	.....	.....	2683	125	18	.....	525	68
1780 — 1790	.....	73	24780	.....	.....	2460	244	33	.....	170	45
1790 — 1800	.....	51	19253	.....	.....	1940	75	.....	.....	92	17
1800 — 1810	.....	37	17779	.....	.....	1781	86	.....	.....	147	23
1810 — 1820	.....	28	10620	.....	.....	1064	159	.....	.....	99	26
1820 — 1830	.....	76	9251	.....	.....	932	61	.....	.....	145	20

TABLE III.

Weekly Amount of Burials from all Diseases and from Plague.

	1593.		1603.		1625.		1665.		1647.		1643.	1646.
	Burials.	Plague.	Burials.	Plague.	Burials.	Plague.	Burials.	Plague.	Burials.	Plague.	Plague.	Plague.
Jan. 3.	.....	.....	.....	.....	.....	1	.....	.....	183	10	10	2
10.	.....	.....	.....	.....	.....	1	.....	.....	197	6	11	
17.	.....	.....	.....	.....	.....	.....	.....	.....	206	18	11	2
24.	.....	.....	.....	.....	.....	.....	.....	.....	201	16	8	
31.	.....	.....	.....	.....	.....	3	.....	.....	184	9	11	1
Feb. 7.	.....	.....	.....	.....	.....	5	.....	.....	164	13	8	
14.	.....	.....	.....	.....	.....	3	.....	.....	204	2	1	5
21.	.....	.....	.....	.....	.....	1	.....	.....	205	1	2	1
28.	.....	.....	.....	.....	.....	.....	.....	.....	189	4	4	1
Mar. 7.	.....	.....	.....	.....	.....	.....	.....	.....	199	2	8	5
14.	230	3	108	3	262	4	.....	.....	198	5	3	5
21.	351	31	60	2	236	8	.....	.....	225	4	2	3
28.	219	29	78	6	243	11	.....	.....	223	7	9	5
April 4.	307	27	66	4	239	10	.....	.....	225	14	9	2
11.	203	33	79	4	256	24	.....	.....	201	9	6	4
18.	290	37	98	8	230	25	.....	.....	223	6	7	8
25.	316	41	109	10	305	26	398	2	180	7	5	6
May 2.	350	29	90	11	292	30	368	.....	167	6	9	5
9.	339	38	112	18	232	45	347	9	185	11	13	6
16.	300	42	122	22	379	71	353	3	176	5	15	9
23.	459	58	122	22	401	78	385	14	159	1	3	5
30.	410	62	114	30	395	69	399	17	197	12	3	5
June 6.	441	81	131	43	434	91	405	43	158	7	3	9
13.	399	99	144	59	510	161	558	112	181	17	2	12
20.	401	108	182	72	640	239	611	168	187	16	2	22
27.	850	118	267	158	942	390	684	267	197	9	3	10
July 4.	1440	227	445	263	1222	593	1006	470	268	47	4	25
11.	1510	396	612	424	1781	1004	1268	727	317	97	9	28
18.	1491	258	1186	917	2850	1819	1761	1069	290	128	7	50
25.	1507	852	1728	1396	3583	2471	2785	1843	363	151	11	58
Aug. 1.	1503	983	2256	1922	4517	3659	3014	2010	436	209	8	82
8.	1550	797	2077	1745	4855	4115	4080	2917	439	191	27	106
15.	1532	651	2054	2713	5205	4463	5319	3880	520	248	24	122
22.	1506	449	2853	2539	4841	4218	5568	4237	424	161	96	195
29.	1490	507	3388	3035	3897	3344	7496	6102	450	208	28	207
Sept. 5.	1210	563	3078	2724	3157	2550	8452	6988	546	267	31	238
12.	621	451	3129	2818	2148	1672	7690	6544	430	184	52	149
19.	629	349	2456	2195	1994	1551	8297	7165	494	215	61	157
26.	450	330	1961	1732	1236	852	6460	5533	432	212	51	175
Oct. 3.	408	327	1831	1641	833	538	5720	4929	403	183	73	114
10.	522	323	1312	1149	815	511	5068	4327	359	172	59	115
17.	330	308	766	642	651	331	3219	2665	367	163	67	106
24.	390	302	625	508	375	134	1806	1421	331	114	73	67
31.	310	301	787	594	357	89	1888	1031	304	120	59	52
Nov. 7.	309	209	545	442	319	92	1787	1414	265	84	56	55
14.	301	107	384	251	274	48	1259	1050	279	66	27	27
21.	321	93	198	105	231	27	905	652	261	60	14	37
28.	349	94	223	102	190	15	544	333	182	18	14	34
Dec. 5.	331	86	163	55	181	15	428	210	231	17	14	22
12.	329	71	200	96	168	6	442	243	172	15	15	26
19.	386	39	168	74	157	1	525	281	.....	.....	.....	29

CHAPTER II.

PLAGUE OF EGYPT AND SYRIA.

I SHALL now turn to Plague, as it has been described by different authors, tracing it from south to north, with a view to observe whether temperature has any modifying effect upon it analogous to what we observe in Marsh fever.

I shall content myself with observing, that Price (Hamilton, *Observations on the Utility of Purgative Medicines*, 6th edition, 1818, p. 191,) mentions that it occurs in Egypt, with fever of a periodical type. In speaking of the efficacy of purgatives, he says, "In some cases I observed the fever to terminate upon the evacuation taking place, there being no evidence of the recurrence of the paroxysms, although in seasons when the fever accompanying the eruptions assumed the remittent or intermittent type:" and Bancroft, p. 565, reports, on the authority of Price, "that all the sepoys and other East Indians who had the Plague in Egypt, had the fever of an intermitting form, and that most died in the cold stage." Sir James M'Gregor (*Sketches*, p. 112,) also reports, that when the Indian army encamped near the marshy ground at El-Hamed, the cases of Plague were of the remittent and intermittent type.

Assalini*, who was attached to the Syrian expedition in 1799, has communicated many facts

* *Observations on the Plague, &c.*; by P. Assalini, M.D. Translated by A. Neale. London 1804.

respecting the Plague, which strongly support the idea of its origin from malaria ; and though he prefers giving the disease which attacked the French army the name of epidemic fever, there can be no question that it was the true Plague, any difference observable in it and the disease, as described by Diemerbroeck, Sydenham, Mertens, &c., being satisfactorily accounted for by the latitude of the respective epidemics. Hennen, in his *Sketches of the Medical Topography of the Mediterranean*, p. 525, asserts, that Assalini "candidly avowed" to him a belief that the Plague was contagious ; and he adds, "After much discussion on the opinions expressed in his book, he" (Assalini,) "was left with no other defence of the principles contained in it, than the possibility that the disease he saw was not true and genuine Plague." I shall not affect to explain this singular passage, which reminds me of a similar assertion made respecting Rush, and noticed by Bancroft, p. 467 of his "Sequel," &c.

That Assalini believed the epidemic fever he saw in Syria arose independently of contagion, his book affords conclusive proof ; and that it was Plague, I shall leave others to judge of by quoting his description, which may be compared with the epidemics reported by Russell and others. It will be seen from the facts that I shall state of Plague, that it is a disease which owes its fatality to the symptoms common in other modifications of fever ; and that abstract those conditions dependent on fever, and consider it merely as an eruptive disease, and its formidable character disappears. I need only refer to the observations of Sydenham and Russell, in proof of the correctness of this assertion ; and if,

therefore, fever be an essential part of Plague, it is natural to expect that it should be materially modified by climate. The evidence of the Marsh origin of Plague in Egypt, by its exhibiting more or less distinctly the periodical types of fever, is to my mind a strong argument in favour of its malarious origin everywhere; and if we lose in more northern climates the periodical type, it but obeys in this respect the law which apparently influences the form and character of these fevers, which are generally unattended by glandular tumours and carbuncles.

It was the opinion of Alpinus that Plague was brought to Egypt either from Greece, Syria, or Barbary; and it is well known that it generally ceases in June, though Bancroft shows, that at Aboukir a case occurred towards the end of July. Assalini asserts, that in consequence of the British blockade, no vessels from abroad could be supposed to infect the French army, and that the disease was in consequence attributed to goods, which since the year before had been left infected in the magazines of Alexandria and Damietta. The army landed at Alexandria on the 5th of July 1798, in good health; just after the city had been visited by Plague; and it does not appear that the disease broke out among the troops till September, October and November at Alexandria, Rosetta and Damietta; while Boulac, Cairo, Gizeh, and the whole of Upper Egypt were preserved from it.

The army which left Cairo for Syria in the beginning of February 1799, reached Jaffa on the 4th of March, and on the 11th, Assalini saw for the first time about twenty soldiers attacked with the disease. No contagion was communicated to the army

by the troops of the Pacha of Acre, nor by those who were in El-Arich, since there was no clear proof of their having had the disease. He saw 4000 of the prisoners "driven together like flocks of sheep, and closely guarded for three days and nights, without a single one falling sick;" and the Mograbins who fought in El-Arich, and who were retained in the rear of the French army as a corps of auxiliaries, enjoyed to a man perfect health. As to the troops under Kleber, which came from Damietta, "it is a certain fact," that after their departure from Damietta there were no sick among them; and upon their arrival in Syria, they marched to Jaffa, and afterwards towards the Jordan, without having any intercourse with the troops which came from Cairo.

"If the army coming from Egypt (Cairo,) was attacked," says Assalini, "by an epidemic disease, which, from the havoc it caused was called the Plague, it ought not to be attributed to contagion, but to the fatigue it underwent in crossing the desert." It left Cairo early in February 1799, when the days were very hot, and the nights clear and temperate. In a few days they consumed their water, and were obliged to make use of brackish water, or mud mixed with water, which only increased their thirst; and their food consisted of horse and camel flesh, without bread. On the 24th they reached Gaza, and encamped under the walls of Jaffa on the 4th of March. "The soil of Syria presented neither the barren plains nor the burning sands of the desert. Westerly winds, loaded with vapours from the sea prevailed, which condensing in a colder tempe-

perature, produced heavy rains and storms, rendering the roads more fatiguing. The flats became filled with water, and the rivulets we were obliged to ford came up to our sashes. The soldiers were drenched with rain night and day, and had slept on the damp soil of Ramla, and breathed the thick fogs of its environs. Having arrived at Jaffa, the division Bon was placed close to the sea, immediately on the banks of a lake full of stagnant water; and the direction of the winds was such, that the exhalations of these marshes were carried into the camp. The disease first showed itself among these troops, though they had come direct from Cairo."

Jaffa, in latitude $32^{\circ} 20'$, is a small sea port on the Mediterranean, situated on an eminence, and built in the form of an amphitheatre. The sea washes its walls on the north and west, and extensive woods cover it on the south and east. A chain of mountains, which stretches from north to south, opposes a barrier to the clouds brought by the winds from the west and north, and gives rise to thick mists and heavy rains during the winter and spring. The nature of the soil, and the want of ditches and canals to drain the ground, occasion several ponds or marshes, close to three of which the army encamped. "On the taking of Jaffa by assault, the number of Turks half-buried, the bodies of those whom the sea threw back and left on the shores, the miasmata from the putrefaction of the carcases of the horses and camels left dead upon the ground, the want of fresh provisions, the filthiness of the inhabitants, the hordes of Bedouin Arabs who blockaded the city, in a few days over-

whelmed us with all the miseries of war, famine and pestilence."

"It is well known that the air of Jaffa and of the whole coast of Syria is damp, heavy, and infected by the exhalations of marshes, and that the action of the sun's rays through this thick atmosphere is very pernicious. Our soldiers after a residence of eight months in Egypt were neither accustomed to cold nor rain, and could not become habituated to the great varieties of the temperature of Syria with impunity. The fine climate of Cairo, and the air which they there breathed, gave to the body a state of remarkable health, which of course became impaired in a damp and unhealthy situation. We had nothing at Jaffa but rice and bad bread; animal food, wine and brandy were wholly wanting. I constantly observed that whenever the winds from the south and south-west prevailed, the number of sick and of deaths was always increased, and the contrary happened in fine weather and when the wind came from the north."

Of the particular symptoms of the disease which, under these circumstances, attacked the French army, Assalini does not afford a full and satisfactory account. "I am at a loss," he says, "what name to give to a disease which attacks several individuals at the same time, and the chief symptoms of which are fever, buboes, partial gangrenes or carbuncles, prostration of strength, head-ache and delirium, and which generally carries off the patient on the third or fifth day. An universal debility, accompanied by a great weight in the head, is a constant precursory symptom. The counte-

nance has a particularly stupid look. If the patient be of a sanguine temperament and of a fine skin, his appearance becomes bloated and his colour of a reddish purple; the minute vessels of the conjunctiva become turgid with blood; and the patient in this state does not leave his usual occupations, but endeavours to keep on his trembling legs, though obliged often to have recourse to some object for support: he yawns frequently, rubs his face, and at last retires to some solitary place, where he covers his head and gives himself up to sleep. If in this state he be left without assistance, his pulse becomes more quick and frequent, the heat of his skin more intense, and the universal debility greater. If interrogated, he stammers out a reply, his ideas become confused, and on the third or fifth day he dies delirious. Among the precursory symptoms there was a general affection of the nervous system, loss of appetite, slight inclinations to vomit; the tongue rarely showed any marks of derangement in the stomach, the stools became altered and liquid, the urine resembled distilled water, the glands of the groin and arm-pits, rarely those of the neck, became painful and swelled and gave rise to buboes. In general the whole lymphatic system appeared affected. Often small black spots showed themselves on the skin, which became perfect gangrenes. This malady was very mortal in Egypt, and especially in Syria: one third of those attacked died in the early stage of the disease, and the majority with buboes. Sweats were favourable, and carried off the fever, speedily after which the buboes disappeared: sometimes they came to suppuration, which

rendered the disease and the convalescence very lingering. Carbuncles and gangrenes were bad symptoms."

"Of the inhabitants of Jaffa who perished by the Plague, a great number were infants, very few women*, some men, almost all strangers. Persons of a full habit, infants with a fine skin and flaxen hair, young people of a sanguine temperament and irritable fibre, were more liable to the disease than those advanced in age or of a dry and bilious temperament."

There can be no question that the circumstances and the situation of the French army were such as to expose them preeminently to disease, and especially to fever, like that which is annually endemic in Egypt and Syria: and there are perhaps few professional men conversant with the remote and exciting causes of Marsh fever in different countries, who would have hesitated to refer the disease in the French troops to their hardships, to the emanations of the soil, the vicissitudes of climate and temperature, but for those peculiar symptoms which are considered as characteristic of Plague. To minds strongly preoccupied with the idea of the essential contagion of those epidemics which are attended by bubo and carbuncle, it would be useless to urge the fact, that these symptoms are not always present in what is considered to be Plague; and that when they are observable they do not appear of themselves to give fatality to the disease, but that the symptoms of fever, and some-

* See vol. i. p. 344, where women were equally exempt from Marsh disease in North Carolina.

times distinctly of an irregular intermittent, remittent, or continued type, are mainly instrumental in occasioning the mortality, which happens, as in common severe Remittents, on the third or fifth day.

The army to which Assalini was attached, after landing at Alexandria in July 1798, just after the cessation of Plague, and when the Franks still kept themselves locked up in that city, marched immediately to Cairo, where it arrived on the 23rd, and no disease like Plague broke out in it till eight months afterwards, viz. in March 1799, under the walls of Jaffa, where the situation, the previous exposure to damp, to the marsh air at Ramla, to fatigue and privations, may readily account for its sickness. It does not appear that there was any Plague at Jaffa, or that there had been any communication between the detachment from Damietta under Kleber, which had suffered from Plague in the autumn of 1798, and the army from Cairo. Assalini asserts, that "Kleber's division had no sick in it on its leaving Damietta: and if, notwithstanding all this, it be contended that contagion was probably communicated to the Cairo army by persons or things from the Damietta division, or by similar means from Jaffa, still the difficulty remains of explaining why the disease had not been imparted from the sea coast to the interior of Egypt from September 1798 to February 1799; and why, when it broke out in Jaffa, it was among the inhabitants confined principally to children and strangers; and that women, whose duty as nurses exposes them especially in the care of children so much to disease, were so remarkably exempt, circumstances which are

highly inconsistent with the idea of the intense contagiousness of Plague. If contagion, because the disease was Plague, is also to be resorted to to explain the sickness of the French army, are the circumstances in which they had been and were placed to be considered wholly unconnected with it; and if both are to be resorted to, how much are we to attribute to the one or the other? It is evident that Assalini saw no grounds for supporting the evidence of contagion; and putting it aside, there is no occasion to insist upon other causes than the condition and the situation of the troops.

It is a very interesting fact that Plague broke out in the cities of Alexandria, Rosetta and Damietta in the autumn of 1798, and that it was limited to the coast of the Mediterranean. Though the inundation of the Nile was one of the most considerable, the other cities of the Delta, Boulac, Cairo, Gizeh and the whole of Upper Egypt were exempt from it. Bancroft states, on the authority of Bruce, that it never appears further south than the cataracts of the Nile, lat. 24°; and Dr. Wilson told Hennen, that it never passed Beniseuf, 60 miles above Cairo. How are these facts to be reconciled with the commonly received opinion of the contagiousness of Plague? It might be argued, that situation modifies the symptoms of Marsh fever, depriving it of the characteristics of Plague. The common belief is, that heat destroys the contagion; but there are facts which are inexplicable on the supposition of contagion being essential at least to the origin of the disease, and which connect it very remarkably with the ordinary forms of Marsh fever, the desultory

visitations of which are so inexplicable, and probably dependent on the mean temperature, the state of the winds, and other circumstances which may be supposed to affect the predisposition of the human body to disease. It is difficult to determine what actually does constitute predisposition, but we may assuredly believe that temperature operates powerfully in the production of Yellow fever; and the observations of Rush would seem to show that among exciting causes powerful affections of the mind have a great influence in producing disease. Assalini thinks the horror and consternation attendant upon the European epidemics, as compared with the composure of the Turks from their principles of fatalism, have given rise to a greater mortality in Europe than in Africa, though seclusion and quarantine regulations are attempted to be observed in the one continent, and are unknown, generally at least, in the other.

"Experience," he says, "has proved that shuttings up have never succeeded in arresting the progress of Plague. This disease always commences by attacking the poor in the most unwholesome quarters of the city, after which the health of the inhabitants in good circumstances becomes impaired, and at length death levels indiscriminately the poor and the rich. Then all becomes confusion; the magistrates are no longer able to maintain authority; the shuttings up cease by little and little; the season changes; the atmosphere becomes purified; those who have escaped recover strength and courage; and all at once the epidemic ceases. This is what has been observed in all Plagues, but

particularly in that of Marseilles in 1720. The history of these epidemics strikes one with horror; and after comparing them with the most malignant Plagues of the Levant, where the shuttings up are only in use amongst a very small number of individuals, I have no hesitation in declaring that in Europe the mortality has been the greatest."

I shall hereafter offer some facts from Diemerbroeck, to show that in the Plague of Nimiguen strong and sudden mental emotions appeared to excite the disease; and these are surely to have their weight, especially since, in the difficulty to account for the propagation of the disease, it is contended, contrary to the opinion of Sydenham and many other authorities, that actual contact is indispensable to its communication.

The facts which strongly excite a doubt as to the contagion of the disease in Egypt, exhibit too close an analogy between it and Yellow fever to be passed over; for, like the latter disease, it appears to have been limited to particular places, and to be insusceptible of existence in an atmosphere uncontaminated by malaria. It was on the sea coast as early as September 1798 in three cities; and though there were necessarily communications between the French troops, both by men and things, with the army and the cities of the interior, there was no communication of disease.

Alexandria, in lat. $31^{\circ} 13'$, is washed by the sea on the west and north, having the lakes Mareotis and Madiez on the east and south.

Rosetta, in lat. $31^{\circ} 25'$, is on the left bank of the Nile, about two leagues from the sea, and to the

eastward on the right bank of the river is flat ground, which is converted into an extensive marsh after the annual inundation.

Damietta, lat. $31^{\circ} 25'$, between the Nile and Lake Menzaleh, is surrounded by fields of rice and by marshes, which render it unhealthy. The imagination can scarcely conceive a country more obnoxious to malaria than the Delta of Egypt, which is alluvial ground, and liable to all the evils which annual inundations under a high mean temperature can produce; and we have the authority of Alpinus for the annual existence of malignant fever in the cities of the coast. That these epidemics are not always the Plague, or, in other words, fever attended with bubo and carbuncle, does not necessarily lead to the inference of the milder differing from the more severe, otherwise than as the common fever of the Southern States of America differs from Yellow fever: and as in epidemics of the last disease there are cases met with of the common remittent fever, unattended by the yellow skin and black vomiting, so in the epidemics of Plague there are examples of fever wanting the bubo and the carbuncle; and it is as reasonable to infer that the last are no more essentially pathognomonic of Plague, than the yellow skin and black vomiting are of Yellow fever.

While the Plague was raging on the coast of the Mediterranean, the interior of Egypt, in the autumn of 1798, was exempt from it.

"I have seen," says Assalini, "a great number of persons who have been attacked by the epidemic after having had communication with the sick; and I would have adopted the conclusion that it was to

the contagion they ought to attribute the disease, if I had not also seen a much greater number who continued to enjoy good health in spite of the most decided communication. I have even seen several individuals contract the disease and die, though they had been living shut up, according to the manner of the Franks. I should have thought it right to conclude that the disease was contagious, had I seen the Egyptians and Syrians fall under its influence, as well as our soldiers, with whom they had constant intercourse. As soon as any one of our men was attacked, two Turks led or carried him to the hospital. There is no doubt that several of them shared the clothes of infected persons without contracting the disease. If it had been contagious, as is pretended, it would not have been possible to have arrested its progress in Lower Egypt, nor to have hindered its spreading to Cairo. The lazaretto near Boulac was of very little use towards effecting so important an object. It is well known that the fear of quarantine only caused the inhabitants to devise schemes to elude the vigilance of the guards of health and custom-house officers. Several Frenchmen and superior officers, coming from Alexandria and Damietta, entered Cairo without performing it. How many packets and letters coming from Alexandria and Damietta, where the disease was raging, entered Cairo without producing any bad effect! In April and May, three soldiers, coming from a fort situated three leagues from Cairo, were conducted to the hospital of Ibrahim Bey, and died two days afterwards, having had intercourse with more than sixty persons. The Committee of Health gave

it as their opinion that they died of the Plague ; and ordered the hospital to be put under a strict quarantine : during the course of which not a symptom of the Plague occurred, nor even a single death."

The limited extent of Plague in the autumn of 1798 does not seem, therefore, to have depended on the want of opportunities for its propagation. There was more or less communication between the coast and interior, and neither persons nor things propagated the disease ; nor did the sick soldiers who died of Plague in the hospital spread it among those who were about them. I would refer to the exemption of Wilmington *, Delaware, from the Yellow fever of 1793 and 1797, when this disease was raging in Philadelphia, and the natives of this last city were admitted, nursed and buried at Wilmington without restraint ; and yet this same disease appeared there in 1798, and was distinctly referred to local causes. It would seem that the same locality of cause is connected with the generation of Plague, and that it cannot be propagated by any means in situations where we may reasonably suppose the local cause does not exist. I shall give a memorable example of this hereafter from Russell ; but Assalini affords the most striking one I have yet met with.

" During all epidemic fevers, and even the most dreadful Plagues, there have been some healthy spots in those cities and provinces where these diseases were raging. The citadel of Cairo presents one example. It has been observed that the inhabitants of this fort and its environs have always

* See vol. i. p. 268.

escaped from the Plague, even from that of 1791: If the inhabitants of this fort, in spite of their daily intercourse with those of the city, were preserved from the disease, it must be because the damp and infected air which had destroyed the health of the inhabitants of Lower Cairo had not sufficient elevation to reach to the highest part of the citadel and its environs, and consequently could not impair the health of those who lived there. When I was doing duty in the military hospital of this fort, I have often seen, at the rising and setting of the sun, the whole city enveloped in a mist so thick, that it was impossible to distinguish even one of the innumerable minarets of this immense metropolis, although the fort was then enlightened by the rays of the sun, and the air we breathed there was elastic, pure and light."

In speaking of the disease of Jaffa, he says, "I was convinced it was epidemic, and that if my health became impaired by a concurrence of any causes whatever, I could not escape it, even by the most strict seclusion. As I was persuaded that obstructed perspiration, damp and infected air, the exhalations of marshes, and bad food, were the principal cause of the disease, I endeavoured to avoid unhealthy places, damp and cold air, and made use of the best food I could procure; and as I knew the influence of the affections of the mind in predisposing to disease, I avoided all melancholy ideas by being always employed."

The writings of Jackson *, and the observations

* See Jackson's Exposition of the practice of affusing cold water in fever; Edinburgh 1808, p. 398. Wake, Edinburgh Medi-

of Wake and Lusecombe, have proved the efficacy of gestation in fever, and Assalini affords equal proof of the advantages of change of place in Plague.

“ I can recommend nothing more useful and efficacious in such cases than to remove from those places where epidemics prevail, and to choose one where the air is more healthy. During the expedition to Syria, General Dugas, Commandant of Cairo and Lower Egypt, being informed that the Plague existed among the garrison of Fort Birketalagi, immediately stopped its progress by sending the garrison to Cuba, where the soldiers, respiring a pure and wholesome air, recovered their health in a few days ; and the troops just arrived at Birketalagi preserved themselves in good health, the more easily by paying a proper attention to cleanliness. As soon as the second demi-brigade was on its march for Syria, forming part of the division Kleber, it became perfectly healthy, whereas at Damietta it had furnished five sixths of the sick in the hospital. I have often seen soldiers who, on seeing their comrades dying, fled from Gaza, though they themselves had the fever and buboes. These patients, at the time of their leaving the hospital, were scarcely able to hold themselves upright, but after having got some leagues into the desert, their strength returned, and they arrived at Jaffa in better health.”

Assalini found bark, boiled with coffee, very successful in the treatment of the Plague at Jaffa, and he used it as a preventative. “ From the use of cal and Surgical Journal, vol. iv. p. 117 ; and Lusecombe, *id.* vol. xvi. p. 442.

this *bitter coffee*, and of warm lemonade made spirituous, when we could find a little brandy to add to it, I have seen," he says, "a great number of individuals attacked with the disease recover, and more than 200 wounded preserved, in spite of their constant communication with those who were infected."

I have entered as fully into the history of the disease which attacked the Syrian division of the French army as the materials afforded by Assalini admit of; and I think there are few unprejudiced minds but will admit that the causes of the disease were similar to those which give intensity to Marsh fever; and that the presence of bubo and carbuncle in the Syrian epidemic does not necessarily separate it, as distinct in nature and cause, from the different modifications of the disease attributable to malaria. It is to be regretted that Assalini does not state precisely what proportion of the cases were attended with the bubo and carbuncle, and whether there was any difference in character between the disease of the autumn of 1798, and that of the spring of 1799. He merely says that "the malady was very mortal in Egypt, and especially in Syria: one third of those attacked died in the early stage of the disease; the majority with buboes." And again, in speaking of the efficacy of sweating, which has been almost universally recommended in Plague, he says, "to whatever it may have been owing, it is at least certain that our medical officers in chief, Desgenettes and Larray in Syria; Dieche near Acre; Saveresi at Damietta; Sottira at Rosetta; Balbes at Alexandria, &c., constantly

cured two thirds of the sick, *the major part* with buboes."

It would appear from this that the majority of those who died and who recovered had buboes, and consequently that many cases were met with in which these symptoms of Plague were absent. It is well known that in rapidly fatal examples of the disease, death occurs before there is time for the supervention of the swellings of the glands; but if these tumours be pathognomonic, they should be met with in all cases where a protracted duration of the malady ending fatally, or the reverse, gives time for the development of essential symptoms. It is probable that those cases which were unattended by buboes differed in no degree from severe forms of Marsh fever; and that a fever differing from Plague was met with, we have the authority of General Dugas, who, writing to Buonaparte on the 8th of March, 1800, from Damietta, in proof of the advantage resulting from changing the quarters of the troops when sickness had appeared among them, says, "The second demi-brigade of light infantry is affected with the prevailing malady more particularly than the others; this same regiment was also severely attacked at Menzaleh with another fever, which obliged more than two hundred men to enter the hospital. A battalion of the 65th went to relieve them: they have inhabited the same barracks, and occupied the same posts, during twenty-five days, and have not had a single sick man."

By "the prevailing malady," I suppose the Plague is meant; and by the other fever, a disease not attended with bubo or carbuncle.

Assalini affords no means of judging of the frequency of the carbuncle, but remarks that he had seen "black spots, like petechiæ, degenerate into true gangrenous eschars, although at first they appeared of very little moment."

CHAPTER III.

PLAGUE OF SYRIA.

WE have elaborate reports of two epidemic Plagues at Aleppo in Syria, lat. $36^{\circ} 11'$, by Drs. Alexander and Patrick Russell*, which furnish some interesting facts illustrative of the nature of this disease. I shall state them as briefly as possible; but it will be necessary to premise some observations on the seasons, climate and epidemics of Aleppo.

Aleppo has a pure, penetrating air, which disposes persons to relapse who have, before their arrival, lately recovered from Intermittents. The westerly winds in summer moderate the excessive heats. The vicissitudes of seasons are much less irregular than in northern regions; and from the end of May, to the middle of September, it is usual for the inhabitants to sleep exposed on their terraces without incurring danger from damps.

* The Natural History of Aleppo, by Alexander Russell, M.D.; 2nd edition, 2 vols. 4to, London 1794: see vol. i. p. 63.; vol. ii. pp. 273, 298. A Treatise of the Plague, by Patrick Russell, M.D.; 4to, London 1791.

Spring commences early in February ; the fields become verdant, the almond tree blossoms about the 14th, and is soon followed by the peach and plum. The cold winds of winter are less bleak in March, and though the sky is cloudy, with a good deal of rain, the heavy showers are of short duration. In April the spring hastens rapidly forward, the sky is more clear, and the fields in full beauty. Early in May the corn is yellow, the gay livery of the fields fades rapidly away, and a few weeks bring on the harvest. The transition to summer is abrupt. Some showers commonly fall in the first fortnight of June, but from that time to the middle of September it is extraordinary to see rain. The sky is constantly blue and serene. The heat, increasing gradually in June, continues nearly in the same degree through July and part of August, mitigated by westerly breezes in the day time : when these fail, the weather is extremely hot, but not so oppressive as when the wind blows from the N., NW., E., NE., or SE. Light airs from these points are not uncommon in summer, rendering the weather more sultry than when an absolute calm prevails ; but when they rise to gales, especially from the E. or SE., they are felt as dry and ardent as from an oven *. They parch the eyes, lips, nostrils, and produce an ineffable oppression at the breast, and lassitude. These hot winds are not observed every

* Moryson, in 1596, observes, that the air at the end of June was so hot, "as methought I supped hot broth when I drew it in: but it is very subtile, so as the Christians coming hither from Scanderoon, (a most unhealthful place, having the air choked with fens,) continually fall sick and often die. And this is the cause

year, and do not produce such fatal effects as the Desert or Simooly wind, which never reaches Aleppo.

In August the weather is calm and sultry till towards the end of the month, when the Nile clouds appear with dew, and the nights become cooler. About the equinox some showers fall, which refresh the air, still sultry in the day, and the fields assume a spring verdure. These are the *first rains*, and for twenty or thirty days the weather is serene, temperate and delightful. The *second rains* then fall more plentifully, and the weather becomes variable and much cooler. The transition, however, from autumn to winter is slower than from spring to summer. The cold does not increase suddenly; the showers are less heavy, but longer, and the sky in the intervals is oftener cloudy. The trees retain their leaves till December, and the most delicate Europeans seldom have fires till the middle of that month. Few of the natives use them at all, or only in the depth of winter, when the season is unusually severe. The rigour of winter, as they say, commences December the 20th, and lasts forty days; and though frost and snow have been observed earlier and later, yet the true wintry weather falls within that period, and the air is often so sharp and piercing, that the cold appears excessive even to strangers from colder climes. The winters vary considerably in degree of cold, and quantity of rain and

that the English factors employed here seldom return into England, the twentieth man scarcely living till his prentiship being out he may trade here for himself."—*Natural History of Aleppo*, vol. i. p. 360.

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snow. During thirteen years the ice was only three times able to bear a man. It is very seldom that there is not some frosty weather, but many years pass without snow. In three only of thirteen winters did the snow lie on the ground more than one day. When it is clear and calm, the sun has so much power that the weather is always warm and sometimes rather hot. The narcissus flowers most part of the winter, and hyacinths and violets are plentiful in January. The winter and spring winds blow chiefly between the NW. and SE., the colder as they verge toward the E. ; yet from May to September these winds are peculiarly hot.

Dr. Russell has given a general account of each month in the year, from a comparative review of the Meteorological Register for nine years, together with the extreme heights of the thermometer. The instrument, however, observed within doors, affords only an approximation to the real temperature.

January.—Commonly frosty or rainy; the middle the most usual time for snow; after, often frosty to the end: winds N. or E. Therm. 34° — 57° .

February.—Weather more variable; sometimes snow and frost, more usually wet, especially in the first fortnight: winds the same; towards the end, W. Therm. 40° — 55° .

March.—Much rain, in short hard showers; often with thunder and dark gloomy weather, but the sky is for the most part clear, and it begins to be hot: winds fresher, oftener W. Therm. 44° — 67° .

April.—Seldom overcast, except in thunder showers, which are less frequent; a few days of close

hazy weather, with light N. or E. breezes: winds generally fresh W.; mornings and evenings hitherto cool; hot in the day. Therm. 56° — 82° .

May.—Generally serene; a few hard showers, with thunder and sometimes hail; very hot in calms, or with N. or E. winds: winds generally W., which through the summer have great influence on the weather; when they are weak the heat increases, and is extreme when they cease. These changes are less sensible to the thermometer than to the feelings; but during the N. or E. winds the air is oppressively hot, and the thermometer is raised several degrees. Therm. 67° — 92° .

June.—Sky serene; rain very uncommon; heats great, but mitigated by W. winds, predominant at this season; they freshen towards noon, and often continue through the night. Therm. 76° — 96° .

July.—Serene, hotter: W. winds fresh; excessively hot if they fail. Therm. 77° — 101° , (very seldom as high as 100°).

August.—Till the 20th serene, when large and dense white clouds, called the *Nile clouds*, appear. Dew, hardly ever observed in summer, now falls, but not yet considerable. Therm. 74° — 97° .

September.—Weather in the first fortnight the same as the last of August, or more sultry. If no rain falls, clear and sultry throughout. Between the 15th and 25th, black clouds and squalls from the W. commonly arise, and in a day or two the *first* rains fall, which refresh the air. W. wind seldom more than a light breeze; very often calm. Therm. 62° — 92° .

October.—Weather serene and cool till the se-

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cond rains, which fall three or four weeks after the first, and are more copious : winds variable. Therm. 51° — 84° .

November.—Rainy, with frequent intervals of fine weather; mornings, in serene weather after the 15th, generally frosty : winds variable, generally N. or E. Therm. 44° — 65° .

December.—Rainy; the intervals often cloudy or foggy; cold weather begins about the 15th; more or less frost, sometimes snow: winds E. or N. Therm. 40° — 55° .

The common epidemic diseases at Aleppo are Continual, Intermittent and Remittent fevers, regular and anomalous; Erratic fevers, to which children are liable; Diarrhœa, Dysentery, Pleurisy, Peripneumony, Quinsy, Rheumatism and Ophthalmia, which all return as regularly as the seasons.

The Continual and Intermittent fevers of spring appear sometimes as early as January, but more commonly towards the vernal equinox, and *disappear in June*. The autumnal fevers and the Dysentery succeed immediately or in July; and arriving at their height about the equinox, disappear at the beginning of December.

The Erratic fevers, peculiar to children, commence in the spring, but rage with most violence in the summer, when Essere (*Lichen tropicus*,) is common.

General Inflammatory fevers, as Catarrhal fevers, Quinsy, Pleurisy, Peripneumony, Rheumatism, are most prevalent from December to March or April, but can hardly be called epidemics.

Malignant Intermittent and Remittent fevers,

being peculiar to particular years or situations, do not properly belong to annual epidemics: they appear at distant and irregular periods, and "being contagious, rage with fatal violence, as putrid, petechial, malignant Intermitting and Remitting fevers, Plague," &c.

The Continual fevers, and almost all other acute diseases, are subject to exacerbations once or twice in the twenty-four hours; but the Continual fevers of spring, though often attended with symptoms seemingly worse than those of autumn, are in general not so dangerous. The critical periods agree more exactly with the descriptions of the Greek physicians, and with their doctrine of critical days and evacuations, than in Britain.

The Tertian fevers of spring and winter either assume a regular form, or have remissions which admit of bark; but are more treacherous and obstinate in the autumn. "Malignant ones are seldom seen at Aleppo. They are the produce of Scanderoon, or other marshy situations, or of villages where the adjoining grounds are occasionally laid under water, and they rage with dreadful violence in certain years. Europeans who have made any stay at Scanderoon, as well as the natives of that place, and other maritime marshy situations, are liable to Tertian Agues soon after their arrival at Aleppo; and convalescents from those places often have a return of their fever."

Scorbutic eruptions, with putrid gums, are sometimes met with; but confirmed scurvy is almost unknown.

The Europeans from northern climates, soon after

their arrival, are subject to an Inflammatory fever, which attacks but once, and which is regarded as a kind of seasoning. The pulse rises, the head-ache, heat, thirst, become excessive, and the patient continues restless till he is relieved by a sweat. The fever, though violent, seldom continues over twenty-four hours; but in general it is necessary to bleed largely.

The inhabitants say they are visited by the Plague about once in ten years; that it is not bred among themselves, but brought from Scanderoon or Damascus. Its first appearance is always in one of the maritime towns of Syria; if in Sidon, Byroot, or Tripoly, the channel through which it comes to Aleppo is Damascus; if in Scanderoon or Byass, its approach is by Khillis, Aintab, or Marash.

The dates of the prevalence of this disease at Aleppo, mentioned by the two Russells, are 1719, 1729, 1738, 1742—45, 1760—62, and 1787.

In 1719, it raged at Tripoly, Sidon, and other places in that neighbourhood, for some months before it reached Aleppo, where it made great havoc, advancing with such rapidity in the spring that the Europeans shut up from the middle of March to the middle of July.

In 1728, it raged in Egypt, at Byass, and parts adjacent, in the summer, but did not break out at Aleppo till 1729, where the number of sick was small; and the Europeans did not shut up till the middle of May, and were confined only a month.

In 1732, it raged at Tripoly, Sidon and Damascus, but did not reach Aleppo till 1733. It was not so violent as in 1719.

In 1797, it broke out in April; increased in May; raged violently in June; and terminated in July.

It never spreads much in winter; advances with the spring; reaches its height in June; declines fast in July; and disappears in August. Extreme heat seems to check its progress; for though the contagion and mortality increase during the first heats in the beginning of summer, a few days' continuance of the hot weather diminishes the number of new infections.

Those who have had the disease once *are not exempt from contracting it again*, for many have had it twice or oftener; and the same person even has been infected three times in the same season.

From this account of the diseases of Aleppo, we perceive a general analogy between them and those of Minorca and the Southern States of America. In the latter, we have an opportunity of observing the effects of climate on the health of natives from more northern regions; but we are deprived of this at Aleppo, from the few Europeans who resort to that city; and their mode of life is necessarily different from what it would be in a Christian country. It is evident, however, that the change from a northern climate to one so hot as Aleppo subjects the Europeans to an attack of fever, probably analogous to the Inflammatory endemic of the West Indies, and which, like it, is promptly cured by large bleeding.

The fevers to which children are liable in the summer at Aleppo, though attended with diarrhoea; are not described by Russell as analogous to the *Cholera infantum* of America, though probably the

same disease, and like that noticed by Cleghorn at Minorca.

We perceive the same change of type of fever at Aleppo as in the Southern States of America, and that malignant Intermittents and Remittents are only occasional visitants, expressly referred by Russell to marshy situations. He imputes a contagious influence to them ; which is disproved by the facts connected with the American fevers. If they originate at Scanderoon, or in the villages near Aleppo, which were annually subject to inundations, from the waters of the river Kowick being let out for the purposes of agriculture, I see no reason why they are not to be referred to the influence of that peculiar constitution of atmosphere which gives aggravation to fever, and why the same general cause should not operate at Aleppo, independently of contagion, as we are told that ordinary Intermittents return there every year as regularly as the seasons.

The Plague presents so many anomalies, considered as a disease, dependent exclusively on a specific contagion, that it cannot be reduced to any rule ; but as a modification of the endemic fevers of Aleppo, it would appear to be a spring and autumnal aggravation of them, attended occasionally with carbuncle, and oftener with glandular swellings. It should be remarked, that it never appears originally at Aleppo till the spring. During two summers and winters that it was at Byass and the adjacent mountainous districts, in neither instance did it deviate from the invariable order of appearing at Aleppo till the succeeding spring, though the di-

stance is only seventy miles ; and we must suppose the communication, both by persons and goods, was frequent, as Byass is in the Gulf of Scanderoon, the sea-port of Aleppo. Though, as a general rule, it declines in August, we have the testimony of Dr. P. Russell, that occasionally it lasts from August to November. It would seem, like all spring epidemics, to disappear as the heat becomes steady, and in this respect is analogous to the Spotted fever of the New England States. The uniformity of the summer season at Aleppo is hostile to the prevalence of Plague ; but as the variable weather of autumn advances, it reappears, and shows itself slightly through the winter in the most sickly years.

The Pleurisy and Peripneumony are merely mentioned among the winter and spring epidemics of Aleppo. We have no evidence that they present that formidable bilious character which belongs to them in America and Minorca.

I shall offer some details of the character of the three years of the Plague of 1742, and afterwards notice that epidemic, and the one of 1760.

1742. The winter of 1741—1742 was unusually severe, and much less rain fell in March and April than common. The weather became very warm from the end of April to the 20th of May ; from which time till June 22nd, it was rather cool for the season, the air being refreshed by strong E. breezes ; when, these giving way to light winds from the N. and W., it became exceedingly hot till July 11th. There were none of the hot E. winds this year. Some hard showers fell on September 25th, which were the first rains, and the weather was pleasant in

the interval between these and the second rains, which fell on several successive days towards the end of October. From that time it was fair and serene till December 14th, when a hard frost set in, and continued all that month.

The city was healthy till the beginning of March, when an acute fever, with pain in the right hypochondrium became frequent till the middle of June; after which it could not be called epidemic. Copious venesection, &c., brought on a crisis by sweat on the seventh or ninth day; but sometimes, though the pain was removed, the fever changed from a continual form to a regular Intermittent, and was cured by bark; but such patients had to observe a strict regimen for some time, being very subject to relapses, if guilty of any irregularity. If evacuations were not used in due time, the disease was often fatal, or ran on to thirty or forty days, and some few died hectic. It seldom attacked children under ten years of age, and the crisis in them was commonly by a diarrhœa.

About the middle of July, Diarrhœa and Dysentery became frequent, and were epidemic all autumn, the stools being at first bilious, with severe gripes, and a high fever constantly attended, often with petechiæ and other bad symptoms. The disease sometimes changed unexpectedly, and terminated in sudden death, as did some of the Intermittent fevers, epidemic at the same time. "This unexpected mortality happened now and then, during the time of the Plague, in all acute diseases, where the sick, not being shut up, had been exposed to infection; but in such cases, buboes or other charac-

teristic marks of that distemper were seen but seldom."

The Plague had raged in the summer of 1741 at Byass, a town in the Gulf of Scanderoon*, and was said to have been transported to Khillis, Aintab, Azaz, and most of the villages in the adjacent mountains, where it continued all winter. It was "brought to Aleppo about the middle of April by the Kurdeens, who came from those parts to be employed as reapers, and who take up their residence in the suburbs, where the disease was confined to them and a few others for some time, nor till the 18th of May did the Europeans hear anything of it. In a few days it increased somewhat

* "The coast of Syria is everywhere bounded by high mountains, except near Seleucia, where the Orontes, in its way to the Mediterranean, runs through a plain between Mount Pieria and Mount Casius. The mountains are watered by fresh springs, and retain their verdure all summer. The side towards the sea is steep or with a gentle slope, and in many places narrow plains intervene between the bottom and the shore. Many small streams and winter torrents empty themselves by a rapid current into the sea; but in wider parts of the plains, where the level of the beach does not favour the escape of the water, noxious marshes are formed, and by their putrid exhalations in the hot months infect all the adjacent country, particularly at Scanderoon, the sea-port of Aleppo."

Moryson, in 1596, represents Scanderoon as "compassed on three sides with a fenny plain, and the fourth lies on the sea. On the east side, beyond the fen, is a most high mountain, which keeps the sight of the sun from Scanderoon, and being full of bogs, infects the fenny plain with ill vapours. On the other side, towards the north, the like fenny plain lies, and the mountains, though more remote, do bare the sight of the sun, and the boggie earth, yielding ill vapours, makes Scanderoon infamous for the death of Christians."—*Natural History of Aleppo*, vol. i. pp. 60, 358.

among the Jews, and soon spread in the city and suburbs, though not to any great degree. In this state it continued till the beginning of July, when it was checked by the extreme heat, and at the end of the month ceased entirely. The Jews suffered much in proportion to their numbers. The Europeans shut up at the beginning of June for a month."

About the middle of November it began to show itself in Bankusa, and other suburbs on that side; and before Christmas, was discovered in some parts within the walls; but it remained there without spreading.

Pleurisy was sporadic in December.

1743. In the first fortnight of January, the frost, which had commenced December 14, 1742, continued, and the air was exceedingly cold. It snowed on the 1st and 8th. A few days of pleasant weather succeeded the frost, after which it rained constantly till February 20th, the remainder of the month being fair and pleasant. In March the weather was variable and cooler than usual till the 23rd, between which and the end of the month there was much rain, hail and thunder. It was fair, rather warm and hazy till April 19th. On the 20th and 21st hard gales from the S.W. with much rain, and the weather became remarkably cool. In May hard thunder showers fell on the 13th and 23rd, but otherwise the weather was constantly fair and much cooler than usual, and remained so till June 10th; after which the rest of that month was hot, notwithstanding strong W. winds and frequent transient clouds. On July 1st some thunder showers fell, an extraordinary phenomenon at that season

of the year: the weather was remarkably cool all the month, a fresh W. wind blowing day and night. Early in August, the W. wind diminishing in the day and ceasing after sunset, it was remarkably warm, and continued so till September 10th, after which, till the 18th, it was uncommonly sultry, particularly in the night. The first rains began to fall on the night of the 18th, and rendered the month quite cool; and the second fell plentifully for three successive days from October 23rd.

Pleurisy was more frequent in January, and continued the greatest part of February.

In the winter months a Continual fever, like that of March 1742, was sporadic, but not so often attended with pain in the right hypochondrium.

Spring Intermittents were common.

The Plague, which had remained in the suburbs all January without making any great progress, began to spread among the Jews in the city in February, and attacked many of the Christians in the suburb Judeda; but as it had at that time visibly declined in Bankusa, it might be said to have changed its quarters rather than augmented its force. About the beginning of March the Europeans were alarmed by the sudden death of some Jews and Turks; but it was transient, as no other accidents were heard of for some time. It was revived on the 20th, and the increase of the disease was soon visible, especially among the Armenians, who suffered remarkably this season. The chief locality of the disease had hitherto been in the suburbs, and the greater part of the infected were women and children; but in April the fune-

erals increased in the city, and several Armenians being attacked in the *Khanes*, where the Europeans have their houses, most of them shut up on the 11th, and did not come out till July 18th, for the intercourse of the domestic servants, who are all Armenians, with their countrymen scattered in various parts of the town, cannot be prevented while the doors remain open. Several of the porters and other persons belonging to the *Khanes* continued to suffer in April; and the disease increased in all parts and among all ranks, raged with more violence in May, and got to its height about the end of that month. At the beginning of June it decreased among the Turks, but increased again from the 13th to the 17th. On the 18th it again declined, and continued, some small interruptions excepted, to decrease with surprising rapidity till the end of June, when the funerals were few, and continued so through July, till by the middle of August the city was free from the Plague. From the middle of November, however, to the end of the year, a person now and then died of Plague; but such cases were rare and most doubtful, hardly more than two being clearly pestilential.

Autumnal Intermittents became *frequent about the beginning of August*, got to their height in September, then gradually decreased, and disappeared at the close of the year. These fevers at the beginning often assumed for a few days a continual form, with violent and irregular symptoms, *not unlike those of the Plague*; but after bleeding and purging they reassumed their genuine form of Tertians, Double Tertians and Quotidians, and were

cured by bark. "It was remarkable this year, that the Europeans were more subject to the autumnal Intermittents than they usually are to the epidemic distempers of the country."

Diarrhœas were frequent in autumn.

1744. An unusual quantity of snow fell in January, and remained unmelted in the shade several days, which is rather uncommon. The weather in February and March was as usual; but April was remarkably rainy. In May and July it was like that of moderate summers in Syria; but June, from the frequency of northerly winds, was hotter than usual, the afternoon height of the thermometer being commonly 95°. After the first week in August the air was remarkably hot from E. winds, which prevailed for several days. On the 30th rain fell; which is extraordinary in that month, and though inconsiderable in quantity, it produced a sudden coolness, the thermometer falling from 92° to 83°. On September 4th the first rains were ushered in by the usual squall of wind; but little alteration was produced in the temperature till the fall of more rain after the 20th. On the 23rd and 24th more rain fell, and the weather grew cool. The second rains fell on October 16th and 19th. In January and February a few Pleurisies and Peripneumonies were met with, which readily yielded to the common method of treatment.

The Plague was in the city in January and February, but made no sensible progress. It began to show itself a little more in March; and though inconsiderable in degree as compared with 1743, it pursued the same course as to the periods of its

increase and decline, and disappeared about the middle of August. None of the English shut up, and some only of the French, in the middle of May. A young French merchant, finding himself indisposed on the 6th of May, was at first rallied by his acquaintances for alarming the Franks by his imaginary illness; but next day matters became more serious, and he died on the 12th of Plague. This accident induced the French Consul and some merchants to shut up immediately. Another European, a Jesuit Father, died after three days' illness in April.

Dr. Russell says, "In the two preceding years I had prescribed for the sick chiefly from the accounts brought me by a person whom I employed to visit them; for though before shutting up I was often deceived by false representations of the case, and led to visit some of the infected, yet I avoided it to the utmost of my power: but this year, the dread of contagion (like that of other dangers to which one has been long exposed) being much worn off, I attended the sick in the Plague, in the same manner as those labouring under ordinary fevers."

Intermittents, for the most part under the form of regular Tertians, existed from the middle of March to the beginning of May.

In June, July, August and part of September, a malignant fever prevailed, attended with much the same symptoms as the Plague, buboes and carbuncles excepted. The vomiting, which commonly came on at the beginning, continued for several days. The fever terminated about the 14th day, but often run out longer; sometimes after the 14th

it had regular intermissions. The cure was much the same as in the Plague, only that the sick bore a second bleeding better. From June to December autumnal Intermittents were very frequent: they did not at first, as in 1743, take on the appearance of Continual fevers; but if not speedily stopped by the bark, were apt, after the fourth paroxysm on the 7th day, to intermit no more, but to run out under a continual form to the 14th, or more frequently to the 21st day, that is, where they did not prove fatal at an earlier period, which was often the case during the warm weather.

Between August and January, Diarrhoeas and Pleurisies were sporadic, as usual in these seasons.

As the years 1742, 1743 and 1744 include the period occupied by the first Plague of Aleppo, I shall briefly notice the principal circumstances connected with the diseases that prevailed with it, and those connected with Plague itself.

The first sickness mentioned is the acute fever, that prevailed from the beginning of March to the middle of June, after which time it ceased as an epidemic. That this was a Continued fever arising from malaria, I infer from its duration, and from its changing to a regular Intermittent. It appears to have terminated, when evacuations were promptly used, either by a critical sweat on the 7th or 9th day, or, passing from the continued to the inter-mittent form, to have been cured by bark. If the evacuant plan was neglected, it proved fatal, or ran on to the 30th or 40th day, and some died hectic, which, taken with the pain in the right hypochondrium and the unusual duration of the disease,

would imply that it was attended with an inflammation of the liver, which sometimes proceeded to abscess and hectic symptoms.

The Plague had existed in the Gulf of Scanderoon, the sea-port of Aleppo, distant about 60 or 70 miles, in the summer of 1741; and though we may suppose intercourse to have existed between the two places, there was no importation of the disease into Aleppo till April 1742, and then for some weeks it existed only in the suburbs, as the Europeans had no knowledge of its existence till the 18th of May. It did not spread to any extent, was checked by the great heat of July, and disappeared entirely at the end of the month. It is evident, from the circumstance of the disease being principally confined to the suburbs, and from the Jews suffering from it much in proportion to their numbers, that it was confined chiefly to the lower class of people; and the fact that the Europeans did not shut up till June, and were confined only a month, confirms the idea.

Russell supposes it was brought to Aleppo in April by the Kurdeens, who inhabit the mountains near Scanderoon, where the Plague had prevailed the winter before. He says that the best information led to the idea that it was transported from Byass to the villages in the adjacent mountains, where it continued all winter; and he affirms that some of these mountaineers, repairing to Aleppo in April, to hire themselves out as reapers, took the disease along with them. He does not say whence the disease was derived that showed itself first at Byass, a situation eminently calculated to

produce malignant fevers, and recorded as early as 1596 by Moryson to be "infamous for the death of Christians." Russell says that the Plagues of Aleppo, however, are derived either from the sea coasts of the south and Damascus, or from the north, viz. Scanderoon and its neighbourhood. But it may reasonably be inquired where these several places get it from; and if we are told from Egypt, the question still would recur, from what unfortunate country does Egypt derive so great a pest? Villani endeavoured, in the 14th century, to detect the origin of the pestilence, which overspread a great part of the globe; and his inquiries terminated in favour of every country, for he was told, after pursuing it from one to the other, all disowning it, that it was originally derived from a great ball of fire which fell down from heaven in China.

The successive development of Plague, like that of other malarious diseases, in places more or less remote from each other, though it naturally leads to the idea of its being propagated by contagion, does not seem to me to require the assistance of so accidental and mechanical a cause, for the *disease-producing* principle is generally spread over a wide extent of surface, and the pestilence, though irregular in its visitations, sometimes advances too rapidly, or is retarded too much, to be explained satisfactorily by the transport of contagion. In the case of Aleppo in 1742, though the Plague was within at least 100 miles, it took from summer to the following spring to advance that distance; and when it did appear, it showed no general contagious activity, for it lurked a long time in the outskirts

of the city, and made no great progress afterwards when it entered the gates. It attacked the Jews, whose condition it will be seen hereafter preeminently renders them obnoxious to malarious fevers. That the disease may have first appeared among the Kurdeens, who had left an atmosphere pregnant with Plague in their mountains, is more than probable, for it is one of the peculiarities of Marsh fevers to lie dormant in the body for months, and to break forth in individuals at last in situations perhaps not obnoxious to such diseases; and we are expressly told by Russell that the air of Aleppo for ages had been remarked to cause relapses in those who had had the fevers of the coast, or to excite them in those who had repaired from the sea coast to the city. If contagion alone was capable of propagating the disease, it should have reached Aleppo the preceding year, provided persons or goods had passed from Scanderoon to the city; and that the condition of part of the population at least was favourable for the reception of Plague, we may infer from the existence of the epidemic Marsh fever, which had prevailed there some weeks before the appearance of the Plague; and if contagion requires any cooperating cause, then the question naturally arises, how much of the effect is due to the one or the other?

Gockelius*, in 1665, relates that "some soldiers returning from Hungary, having been in the Turkish wars, spread infection about Ulm and Ausburgh, where he then lived, and *besides the Plague*, brought

* Practical Treatise of the Plague, by Jos. Browne, M.D. London 1720, p. 52.—See also Gockelius de Peste, p. 26.

along with them *the Hungarian and other malignant fevers*, which diffused themselves around the neighbourhood, whereof many died." This fact appears to me to show that Plague is not a disease *sui generis*, but a modification of malignant fever characterized by eruptions; and since the Hungarian and malignant fevers are now known to be endemic in many parts of Europe, and consequently not to require an imported contagion to give origin to them, I should infer that the Plague alluded to was originally the product of the atmospherical and local causes of the countries from whence these soldiers had come; and that the subsequent cases at Ausburgh and Ulm were to be referred rather to the existence of similar causes there, than to the operation of contagion; just as I would refer the Plague of Aleppo in 1742 to the causes that evidently were in operation in March, producing a specific epidemic fever, which in some instances became aggravated, as the usual season for Plague advanced, and exhibited occasionally those symptoms which are, I think, arbitrarily considered to constitute a disease *sui generis*.

The fevers of the interior of the Southern and Midland States of North America are certainly as malignant as the Hungarian, and the pernicious fevers of Italy; and no one can reasonably question their arising from endemic causes. If they are considered to be totally distinct from Plague, at least they bear a very close analogy to the forms of fever which, we shall see, very often appear at Aleppo as *the Plague declines*; and though the malignant Yellow fever of the sea coasts of America is generally

distinct from the Plague of Syria, it will be seen that the two diseases in some respects approach very closely to each other: so that, abstract the yellowness of the surface from Yellow fever, which is in fact not essential to the disease, and add to it the bubo and carbuncle, which we have the testimony of Rush and other authorities do actually sometimes occur in it, and it would then be impossible to distinguish the one disease from the other.

I therefore justify the doubts I entertain upon the subject of the importation and contagion of Plague at Aleppo, by an appeal to the general analogy which exists between it and Yellow fever; and since both these malignant diseases are only of occasional occurrence, so far from conceiving that, if Plague first appears in Egypt and afterwards in Syria, it must necessarily be transported from the one country to the other, I should look upon its appearance in the higher latitudes of the Levant as the natural effect of the progressive advance of the atmospheric causes to which malarious fever in its worst forms is to be ascribed. That the Plague obeys temperature is shown by its earlier appearance and earlier decline at Cairo than at Aleppo, following the same law as the Yellow fever observes in America from Vera Cruz to New York. Mead shows the same fact in speaking of the pestilence of the fourteenth century, which appears to have advanced gradually from hot to cold climates, and too slowly to admit of the exclusive operation of contagion; for if a bale of goods could give origin to a pestilence, we should infer that the transport of merchandize ought to have

disseminated that pestilence more rapidly than it appears to have been diffused.

"The greatest mortality that has happened," he says, "in latter ages was about the middle of the 14th century, when the Plague seized country after country, for five years together. In 1346 it raged in Egypt, Turkey, Greece, Syria and the East Indies; in 1347 some ships from the Levant carried it to Sicily, Pisa, Genoa, &c.; in 1348 it got into Savoy, Provence, Dauphiny, Catalonia and Castile; in 1349 it seized England, Scotland, Ireland and Flanders; and in 1350 Germany, Hungary and Denmark; and is said to have dispeopled the earth of more than half its inhabitants. Now since Africa had a share of this Plague in the very beginning, I question not but it had its first rise in that country, and not in China, as Villani, in his history, relates, from the report of Genoese seamen, who came from those parts, and said it was occasioned there by a great ball of fire, which either burst out of the earth or fell down from heaven*."

* The Medical Works of Richard Mead, M.D. 4to, London 1762. p. 244.

Dr. Babington has recently translated a work of Hecker's on this memorable Plague, which appears to have been attended in several places with Peripneumony and Hemoptysis. There is nothing definite recorded of it. Hecker conceives that it originated in China between 1333 and 1347. It was at Cyprus, Sicily, Italy and Marseilles in 1347; in Avignon, the North of Italy, Spain, and England in 1348; at Strasburgh, Sweden, Poland 1349, and did not reach Russia till 1351, three years after it was at Constantinople. In England it first appeared in the county of Dorset in August 1348, and disappeared in August 1349; but it lasted three years in Spain. At Avignon it lasted from January to August 1348.

Hecker admits the spontaneous origin of Plague in Europe du-

It was a favourite notion of Mead that Plague always originated in Africa ; and he assumes that of the 14th century did so : but if it were so, and its propagation depended on contagion, how came it in the very year of its birth to extend in one direction so far as the East Indies, and to require four years to reach Germany ? It is a remarkable circumstance in these epidemic diseases, that they advance irregularly from one country to another ; sometimes in the same year invading places remote from each other, and passing harmlessly over others that are more or less in connexion with the sickly districts ; and that they cease in one country or place before they invade another. This is true as to years throughout a continent ; and equally true as to months throughout any portion of it, lying within several degrees of latitude, having a general analogy in climate ; and it is also true as to weeks, throughout the different parts of cities. This is accounted for by supposing something in the different countries or places essential to the reception of the disease, without which it cannot be diffused ; and as this is admitted to be a pestilential state of atmosphere, it is more reasonable to refer the Plague, like the Yellow fever, to this atmosphere than to contagion ; because we know the one is capable of

ring the early ages, and gives from Papon's work a list of six epidemics in Europe from 1301 to 1342. Judging from the London bills of mortality from 1603 to 1679, the disease must have been endemic in the 14th century in every country of Europe. See "The Black Death in the Fourteenth Century," translated from the German of Hecker, by B. G. Babington, M.D. London, Schloss. 1833.

giving origin to malignant fevers, and that the other, from the presence of the sick, dying, and dead, is at times incapable of spreading Plague, as we have seen it has been of spreading Yellow fever.

In 1742, at Aleppo, the Plague did not, as is sometimes the case, prevail to the exclusion of all other diseases. The Continued fever, which began in March, was epidemic till the middle of June, and died away sporadically after that time. In July Diarrhoea and Dysentery became frequent, and were epidemic all autumn, attended with a high fever, petechiæ, and other bad symptoms; and Intermittents were epidemic at the same time. All of them were liable occasionally to change unexpectedly, and terminate in sudden death; and Russell says that this "unexpected mortality happened now and then during the time of the Plague in all acute diseases, where the sick, not being shut up, had been exposed to infection; but in such cases buboes and other characteristic marks of that distemper were seen but seldom."

Now the Plague which appeared in the suburbs about the middle of April, and was not heard of by the Europeans till the 18th of May, continued, but not in any great degree, till the beginning of July, when it was checked as usual by the heat, and ceased entirely by the end of that month; so that it was preceded by, and accompanied a part of the time with, a Continued fever, which occasionally intermitted; was succeeded by Dysentery and Intermittents; and all acute diseases, during its rise and decline, were liable to change unexpectedly, and terminate in sudden death: and Russell would ascribe

this anomalous mortality to the infection of Plague, though the signs of that disease, viz. the buboes and carbuncles, were seen but seldom.

I have shown in the first volume that there is a close connexion between Dysentery and Marsh fever, which is admitted by Pringle and other authorities, and which I think is proved to exist, beyond all possibility of dispute, by the local epidemic recorded by Buel. At Aleppo, then, the diseases associated with Plague were attributable to malaria, which was of a nature to produce generally its usual effects, aggravated, however, in some instances to an unusual degree of malignancy, as was exemplified in the anomalous fatality of the diseases above referred to, and in the Plague itself, between which and the Dysentery and Intermittent there was at least the analogy of the sudden death. I cannot believe that the infection of Plague had anything to do with the unexpected change and sudden fatality of these latter diseases, because it was on the decline, and had exhibited an unusual inaptitude to spread. The constitution of the atmosphere was such, that it gave rise to Plague only in those predisposed to that form of disease; which at Aleppo may be considered an early spring, and late autumnal one, beginning sometimes in March, and declining in July and August; and reappearing in November to decline again in January. In 1742 it ceased entirely at the end of July, and was succeeded by Dysentery and Intermittents, which were epidemic all autumn, and which now and then betrayed malignancy. The Plague reappeared in the suburbs about the middle of November, and before the end of the year made

its way into the city, but did not spread. In January and February 1743, the Continued fever of the preceding year also reappeared sporadically, but was not so often attended with the pain in the right hypochondrium; and as the spring advanced Intermittents were common. The Plague, which had existed in the suburbs all January without making any progress, appeared among the Jews in the city in February, and in the suburb Judeda; but Russell says, that "as it had visibly declined in the suburb Bankusa, it might be said rather to have shifted its quarters than augmented its force." Till the 20th of March, the chief locality of the disease was in the suburbs, and the infected were principally women and children. In April it spread generally; was more violent in May; rose to its height at the end of that month; irregularly declined in June; sometimes rising and falling, and rising again for a few days; decreased with surprising rapidity at the end of June; and disappeared by the middle of August.

Intermittents became frequent *just before the Plague disappeared*, and lasted to the end of the year; and, what is interesting to observe, they often assumed for a few days at the beginning a continued form, "*with violent and irregular symptoms, not unlike those of Plague*;" and the Plague itself now and then appeared from the middle of November to the end of the year, though very rarely. Most of the cases Russell says were doubtful, but two of them "*clearly pestilential*." This year was the most formidable of the three, as far as the Plague was concerned, and we find it shading off,

as it were, into a Continued fever, violent and irregular like itself, but brought by bleeding and purging to a Tertian Intermittent; so that, while in 1742 Intermittents terminated occasionally in sudden and unexpected mortality like Plague, in 1743 the Plague passed through the intermedium of an irregular Continued fever into an Intermittent. These facts are highly instructive, especially taken in connexion with the character of those cases considered as Plague, which occasionally, as we shall see hereafter, are not distinguishable from ordinary malignant Remittent fevers, and which in their most unquestionable form are merely these fevers with the addition of glandular tumours in the majority of instances, and of carbuncles in the proportion of one half or one third of the cases.

In 1744 the Plague was in the city in January and February, but made no sensible progress, nor did it excite any alarm from first to last. It disappeared finally about the middle of August; and though two Europeans died of it, it did not spread from either case. The English did not shut up at all, and the dread of contagion in the mind of Russell being much worn off, he attended the sick in the Plague, in the same manner as those labouring under ordinary fevers.

While Plague was existing in so trifling a degree, Intermittents, and for the most part regular Tertians, prevailed from March to May. But previous to the disappearance of the Plague, though not before it had begun to decline, a malignant fever, *attended with much the same symptoms as the Plague itself*, prevailed from June to September. This

fever terminated about the 14th day, often lasted longer, but sometimes had regular intermissions. It was attended and succeeded by Intermittents, which were very frequent from June to December, and which differed from those of 1743 in not commencing under a continued form, but in assuming it in the second week, and running on to the 21st day most frequently, unless stopped early by bark.

The diseases of these years at Aleppo appear to me, from this detail, to be all referrible to malaria; to that constitution of atmosphere which modifies its effects; and to those individual predispositions which are connected with the different forms of disease. The origin of Intermittents and Remittents is so clearly attributable to this local cause, which produces effects varying in the different seasons and in different latitudes from common Ague and common Remittent to Yellow fever and Typhus, that though Plague is peculiar in its eruptions, I cannot, from its close analogy in all other respects, consider it as a disease *sui generis*, or derived and propagated by a specific contagion, especially as its character is indeterminate, and as the Marsh fevers of other countries occasionally are attended with the glandular tumours and carbuncles. Though it disappears at Aleppo in the hot months, it does not decline for want of subjects apt for its reception, for it always leaves other and milder forms of Marsh fever prevailing. Heat, therefore, in the regular summer climate of Syria, would appear to be hostile to the variable, irregular and anomalous character of Plague, which is most formidable while the temperature, as in spring and

autumn, is variable. It declines as the heat becomes more uniform and intense; but while at Cairo its periods are from February to June, at Aleppo they are from March or April to August; and what is remarkable is, that in those years in which it does not exist at Aleppo, either at all or in the winter, it never is brought to it originally till the spring: and we shall see hereafter that though taken to other places it failed to propagate itself, notwithstanding the season was adapted for its reception, and numerous cases of the imported disease were scattered about among the healthy inhabitants. This is precisely what occurred at Wilmington in Delaware, in 1793 and 1797, with respect to Yellow fever *, and appears to me to be inexplicable on the doctrine of contagion, and which is only accounted for by those who insist on the contagious nature of the disease, by supposing the absence of a favourable concurring state of atmosphere, which we know, without any reference to a contagious principle, is capable of producing fevers.

It is remarkable at Aleppo, that though Pleurisy and Peripneumony are mentioned as sporadic in winter, they are not described at all under those formidable appearances which they present in the Southern States of America. Whether this is an omission of Dr. Russell, or not, cannot be ascertained. His object was to describe Plague. The account of Peripneumony at Minorca by Cleghorn would lead to the idea that the disease in Syria must at times present analogies with those of

* See vol. i. p. 268.

America. It would have been interesting also to know in what respects the Plague which appeared in winter differed from that of the spring and summer. All that we know is, that occasionally at least it was then suddenly fatal after a few hours' illness, as happened generally on its first invasion in the spring.

Dr. Patrick Russell has described the Plague in Syria from 1760 to 1762, and affords such circumstantial evidence of its agreeing in many respects with Marsh fever, that I shall present a detailed history of the epidemic. Though an exclusive advocate of contagion, he is obliged to resort to the agency of an atmospherical cause to account for the inconsistency of imported contagion being at one time the origin of Plague, and at another incapable of producing it. "That the Plague at certain times," he remarks, "is introduced by means of intercourse with infected places, and that a similar intercourse at other times *is attended with no bad consequences*, I conceive to be indisputable facts, which, without supposing some concurrent alteration in the air, I find myself at a loss to account for."

He conceives that the Plague of Syria was derived from Egypt, and he traces its progress from Cairo in 1759. It is important to observe how regularly its development and decline are retarded as we pass from the latitude of Cairo towards the north. It appears at Cairo as early as February, and ceases in June. In 1736 the Europeans shut up on the 9th of February, and came out on June 24th. At Aleppo, however, they do not go into

confinement till May, nor come out till August or September. It is not to be understood that these precautions are taken as soon as the disease makes its appearance, or observed until its absolute cessation. It has often existed in Aleppo for some weeks before the alarm is felt, and it prevailed through the winter of 1761-1762, when commercial and social intercourse was carried on as usual. It often prevails nearly to the same extent in autumn when the Europeans open their houses, as it did in the spring when they closed them; and it is important to remark, that, *on the decline of the Plague*, a Malignant fever prevails, against which it would not appear that any precautions are considered necessary; yet it is probable this fever is of the same nature as the Plague itself, only wanting in some cases those external symptoms which are arbitrarily held to be characteristic of the latter disease.

Dr. Russell first describes the origin and progress of Plague in the Island of Cyprus in 1759, where it appeared in April near Cape Baffo and in villages on the road to Limsol, supposed to have been derived from a ship, laden at Alexandria, which was wrecked near the Cape. Some of the sailors died at Limsol, and others went to Larnica. They remained only a few days, and then crossed over to Syria. Four hundred persons died at Limsol in June; but though the Plague showed itself now and then in those parts where the fugitives had taken shelter, as well as in other inland villages which had intercourse with Limsol, yet it was only about Baffo and near to Limsol that it spread considerably. The state of Larnica was remarkable: it had re-

ceived part of the infected crew from Limsol, and maintained a constant intercourse with the infected quarters. Peasants and male-drivers from those parts with pestilential sores were daily in the streets and markets, and some of them died in the houses of Larnica. A vessel arrived on May 22nd from Damietta, which put on shore some infected persons; and another arrived some time after with others, one of whom died on landing at the Marine, yet none of the inhabitants of Larnica were known to have contracted the Plague. During July, August and September little was heard of it, and it was generally supposed to be extinguished at Limsol and the villages; but it had continued lurking in those parts, showing itself only by starts, particularly at Baffo, Piscopi, and other villages on the western and southern sides of the island. In October it increased in those parts where it had appeared in the spring, and soon after broke out at Nicosia, (the capital, 25 miles N. of Larnica,) where a fair was held. In December 8 or 10 died daily, and towards the end of the year the disease had arrived at such a height as to carry off 15 Christians, which sect bears a small proportion to the Mohammedans.

In February 1760 the disease appeared at Larnica, the daily burials varying from 8 to 20: it was more malignant in March, and continued to rage in April, when it spread over the island. While Larnica and Famagusta* suffered severely from the Plague, it

* We have the evidence of Montanus that Famagusta was obnoxious to a pestilential endemic fever. Sir John Pringle, in his "Observations on the Diseases of the Army," 5th edit. London 1765. p. 397, says, "Forestus quotes Montanus for a description

was decreasing fast at Nicosia. Towards the end of May it was sensibly on the decline at Larnica and most other places; and though pestilential accidents continued to happen in June, the sick generally recovered. The heat was now considerably increased, though sometimes interrupted by cool showery days, in which persons sick of the Plague were observed to suffer remarkably. In July the Europeans came out of confinement, and the island was at length delivered from the pestilence, which had destroyed 70,000 persons. In May the Superior of the Terra Santa convent died. As this convent had shut up with the Europeans in February, and was supposed to have rigorously observed all the usual precautions, the other fathers, having no suspicion the disease could be the Plague, communicated freely with the Superior at the beginning of his sickness: they were afterwards, on the certain marks of it being discovered, much frightened, but all escaped infection.

In this epidemic the singular exemption of the natives of Larnica in 1759, *with the Plague actually imported into it*, is remarkable, and would seem to imply the absence of a local cause essential to its development. It prevailed there in the spring of 1760, and declined in June, but had previously broken out at Nicosia in October 1759, and declined in the spring, when it was raging at Larnica;

of the pestilential endemic fever at Famagusta in Cyprus, arising in summer from the corruption of a lake in the neighbourhood. This very distemper we find taken notice of by Fracastorius, and allowed to be the same with what he calls the *lenticula* or *punctula*, since known by the name of the Petechial fever."

and it is remarkable that at Baffo and Limsol, where it first appeared, it had declined so much in July, August and September as generally to be supposed extinct, though it revived in October at the same time that it appeared at Nicosia.

Dr. Russell traces the progress of Plague along the coast of Syria before it reached Aleppo. The winter of 1756-7 had been very severe throughout Syria, Mesopotamia and Asia Minor, the cold at Aleppo excessive beyond what had ever been known, destructive to the olive-trees, the thermometer within doors falling to 14°, and in the open air to 1°, above zero ! From December 1757 to June 1758 the people of Syria suffered all the miseries of extreme famine. In February 1758 a malignant petechial fever appeared at Aleppo, advanced rapidly in the spring, and raged throughout the summer and part of autumn, with an influence not less extensive than the famine, and both produced a mortality little inferior to that of the true Plague.

In October 1759 the Plague appeared at Saffat, Sidon and Acri. On the 10th of December two persons died at Tripoly (Syria) with suspicious symptoms, and a Jesuit practitioner declared a few days afterwards that he had seen a man certainly infected with the true Plague. The surgeon of the French Consul contended it was not the Plague, and no accidents were heard of for three weeks afterwards. On January 10th, 1760, a messenger from Sidon arrived at Tripoly, and died within forty hours with an axillary bubo. Through January and February though cases were heard of from time to time in the city, they were rare. About the end of the

last month the Bashaw of Sidon came to Tripoly, and the Plague was discovered among his retinue at the palace; and cases soon becoming frequent in other parts of the city, the Europeans shut up at the end of March. The disease spread rapidly in April, continued in a considerable degree during May and June, declined in July, and disappeared towards the end of August, nearly one half of the infected having recovered.

During 1761 Tripoly remained free from all suspicion of Plague; but early in 1762 it broke out in several villages in its neighbourhood, especially in Tortosa, *none of which had been afflicted in 1760*. Alarm, however, subsisted in Tripoly for some time, heightened by the frequent arrival of fugitive families from Aleppo, who brought their bedding along with them, yet, though some of these persons were ill with the Plague, no instance was known of the contagion being communicated to the inhabitants. In April the Jesuit reported he had a patient in the disease, and some time after a young girl was attacked with head-ache, vomiting and a small bubo in the arm-pit, but the French surgeon asserted it was not the Plague. No other instances were heard of in the city, but at the marine 30 or 40 children were attacked in the same manner, and 4 or 5 died. The natives united with the Jesuit in declaring the disease was the Plague, while the French surgeon still maintained the contrary. The condition of Aleppo inclined the Europeans to think the Jesuit in the right, and they shut up from the beginning of May till June. From that time the city was undisturbed by any rumours of pestilence.

About the middle of March 1760, the Plague appeared at Latakea, two children having died within a day of one another, supposed to have caught the infection of a messenger from Acrida; and the next case was that of a woman, who died about the end of the month. The disease increased so much in different parts of the town, that the Europeans shut up on the 17th of April. It extended gradually to May 13th, from which time till June 5th it raged with great violence, then visibly, but not regularly, declined till the 27th, after which the decrease of the mortality was sudden, the burials falling from 20 to 9; and though on the 4th and 5th of July they rose to above 20, they immediately fell again to 6, and by the 1st of August were reduced to 1 a day. After the 5th no accidents were known to happen at Latakea, though the Plague still continued in the villages in the adjacent mountains. There were very few families who had not had the disease in the house, and it was reckoned that nearly as many recovered as died, the mortality amounting to about 4000.

Jerusalem received the contagion in February 1760, and Damascus in March.

“ While Plague was thus spreading terror at Damascus and the maritime towns of Palestine and Syria, Aleppo could not hope to remain exempt. This city would appear to be subject to *periodical* visits, and had enjoyed an unusually long exemption. *The seasons for some time before had been observed to deviate from their usual regularity, and the present period had been preceded by famine, uncommon diseases, and earthquakes.*

“In May 1760, caravans arrived from Jerusalem, Damascus and Latakea. Three merchants from the Damascus caravan were lodged at a public khane, the porter of which, his son and brother, who had attended the strangers, none of whom had appeared sick, and who left Aleppo on the 16th of May, were taken ill: the son died on the 19th; and the porter died of the Plague on the 22nd, and his brother the night following. Four Armenians who attended them caught no infection. These cases were allowed to be extraordinary, and no cases in any other part of the town were heard of for several days.”

Towards the end of May several caravans from Jerusalem and Damascus were refused admittance into the city, but some natives of Aleppo from them went to their houses with buboes still open. “Notwithstanding this dangerous importation, only six pestilential cases came to my knowledge from the 23rd to the end of May in the city, but several occurred in the suburbs, and accidents became everywhere more frequent in June, at the beginning of which a caravan came from Tripoly with several infected persons, and on the 8th and 9th more infected strangers arrived from different parts. A Jew banker was taken ill on the 14th, and died in three days; the first case among the Jews. None of several female attendants constantly employed about this man received the infection, but one of the gravediggers, who assisted in the burial, was taken ill on his return home, and died in three days, leaving his brother ill of the infection in the house, which passed through the family, consisting of five or six

persons, of whom two only recovered. My account of the infected on June 16, amounted to seventy, *including the convalescents from other places*; and it is remarkable, that before the middle of July it was rare to find more than one person sick in the same family, even in the houses of the meaner class. In the last fortnight of June, whilst a greater proportion of the sick recovered, the disease became manifestly more contagious." It had shown itself from time to time in some of the khanes and streets in the inner parts of the town, but chiefly in Mashirka and near the town wall *, in the W. and S.W. skirts

* Dr. Alexander Russell, in his *Natural History of Aleppo*, vol. i. p. 6, says, "The city is not above three miles and a half in circumference, and is surrounded by an ancient wall fast mouldering into ruin. Besides the wall, it was formerly fortified with a broad deep ditch, which at present is in most places filled up with rubbish, or converted into garden ground. In some parts, more especially on the north side of the town, the gardens thus formed are of considerable extent, affording an agreeable prospect from the houses, which by gradual encroachments have been raised on the ruins of the old ramparts; but the putrid exhalations from the stagnant water, at certain seasons, prove offensive and unwholesome to those who dwell there. . . . The river Kowick passes near the eastern gate, under a bridge leading to Mashirka. It is reduced to a small stream, having been let off into the adjacent fields and gardens. In the winter it sometimes swells to a formidable river, lays the lower garden grounds under water and overflows the bridges, but only in very wet seasons, or when much snow has fallen to the northward. Mashirka lies on the opposite side of the Kowick, and is inhabited by Turks of the lowest class. Aleppo is generally well built, well paved, and remarkably clean. The lower ranks of native Jews are miserably lodged, many of their houses lower than the level of the streets, and exposed to the exhalations of the town ditch; so crowded with inhabitants and disgustingly filthy, as to become dreadful receptacles for contagious distempers. All houses have privies, offensive in the small

of the city. After the middle of June it reached the extensive suburb Bankusa, and spread gradually northward to the Judeda. In all these parts its progress was remarkably slow, for though the disease from its first appearance was highly malignant, as hardly one in eight recovered, the daily funerals before June 21 seldom amounted to six, and through the rest of the month rarely exceeded eight. The Europeans shut up the last of June, when the Plague was near its height, for the funerals seldom afterwards exceeded sixteen or eighteen a day, and that only in the first week in July. As a larger proportion, however, recovered than in June, the contagion might be said to be on the increase till July 10; after the middle of which month it declined sensibly, more especially in the suburbs to the south, where it had hitherto chiefly subsisted, and about the end it was greatly diminished, when the Europeans came abroad. In the first week of August the funerals increased, owing partly to the Plague, but mostly to the *ordinary autumnal diseases, especially a Remittent fever which became rife* about this time. To this fever the whole mortality was ascribed; but pestilential cases were too notorious to be called in question. A Rabbi, who kept a school, died on the 6th of August. "I found him surrounded by above a dozen of his scholars, besides several women and

ones in summer, and placed in the entrance of the house. The bagnios are the greatest nuisance in the city. The fuel employed for heating them consists of dung, filth of stables, parings of fruit and other offals, which, accumulated in a yard adjoining, are both in drying and burning extremely offensive to the neighbourhood."

children, none of whom caught the infection except his wife, who fell ill within eight days, and recovered. I heard of no instance of infection later than the 17th, and no person died of the Plague after the 20th of August. The deaths did not exceed five hundred, an inconsiderable mortality, as the Plague had not been confined to one district, but was found dispersed in many parts of the city."

The autumn of 1760 was sickly, but the predominant diseases bore no pestilential marks, and went off upon the approach of winter. The villages in the plains round Aleppo were free from any contagious disease through the winter; but those in the mountains between Antioch and Latakea, which had received the contagion late in the autumn, retained it all winter, notwithstanding a pretty severe frost in January. "In December an infected family from one of these villages came to Edlib, where some of them died. It will not appear strange that accidents of this kind should sometimes have happened, considering the constant intercourse between the villages in the mountains and Antioch, Shogre, and Edlib; nor is it improbable that similar accidents happened at Aleppo. In the mean time so far is certain, that *though infected persons came from the mountains to these towns, and some of them died in the families where they lodged, yet the distemper was not propagated; as if divested of that contagious property in the plains; which it seemed to retain undiminished in the mountains.*"

Soon after the middle of March 1761, the Plague broke out in an Arab encampment, close to one of the gates of Aleppo, and in a *Heisaria* within the

city, nearly about the same time. Its existence, however, was denied; but after the first week of April the reports were contradicted with less confidence. The distemper indeed advanced slowly, and mostly in the skirts of the city or distant suburbs. About the middle of the month some accidents appeared in the quarter of the Jews. May was the month of Ramadan, a season in which the bazars and coffee-houses are unusually crowded in the night, and in which Turks and Christians mingle more together than at any other time of the year. As the contagion was not observed to spread with such rapidity as might in such circumstances have been expected, some pretended it had totally ceased. The distemper increased in the northern suburbs, and dispersedly within the town; and the French shut up on the 16th, and the English on the 28th.

After the beginning of June the Plague increased everywhere with great rapidity. Before the middle of the month a small proportion of the infected recovered; but from that time the disease, though equally contagious, was less fatal, and therefore, though the weekly bills of mortality decreased, the Plague might be reckoned on the increase till the beginning of July, at which period it reached its height. In July a still larger proportion of the sick recovered; and in the second week the contagion, as well as the mortality, manifestly decreased; and after the middle of the month both declined rapidly. Towards the end of the month it was everywhere much diminished. "The usual period of its termination was now arrived. I came abroad on the 29th of July, and soon found that the distemper was very

far from having ceased. In the first fortnight of August pestilential accidents happened within the city, but were more frequent in the suburbs. On the 21st it was discovered that the Superior of the Jesuits' convent lay ill of the Plague. The French and Venetian Consuls, who had come abroad on the 17th, immediately shut up again, and remained in confinement till the 30th, when the manifest decrease of the distemper in all parts of the city encouraged them to venture out. Some of the English rode out on August 1st; but none opened entirely sooner than the 10th. The Consul, and those who had all along continued shut up, opened their doors on the 31st."

The daily bills of mortality from July 27th to August 31st, including the Turkish and Christian burials, were—

July 27.	17	Aug. 14.	16
28.	18	15.	15
29.	16	16.	13—88
30.	11	17.	13
31.	9	18.	12
Aug. 1.	16	19.	16
2.	12—99	20.	14
3.	10	21.	18
4.	16	22.	17
5.	25	23.	10—100
6.	10	24.	10
7.	12	25.	14
8.	16	26.	11
9.	19—108	27.	10
10.	10	28.	4
11.	8	29.	8
12.	7	30.	5—62
13.	19		

"The fluctuation of the funerals appears clearly from

the daily bills of mortality, and seems to denote the progress of the Plague to have been irregular and desultory; nor was this remark less applicable to the other stages of the Plague than to its decline. As the burials increased on some days, there must have been others on which the infection was propagated in an extraordinary degree; and had it been practicable in so extensive a city to have procured accounts tolerably exact of a larger number of the infected, they might, perhaps, with the meteorological register, have contributed to a discovery of the influence of the weather, in respect to the communication of infection, and the termination of the disease.

“ The appearance of the Consuls in the public streets in September, by giving a sanction to the opinion of the Plague being over, served in some degree to quiet the apprehensions of the people. But the opinion in reality was ill founded, for instances of infection were not only more common in the first week of September, but the funerals increased. The unexpected continuance of the Plague was ascribed to the cool weather succeeding extraordinary rains that had fallen the beginning of the month. But the season was now too far advanced to expect much from the influence of hot weather, which was believed to have put a stop to the Plague in former years. There was an increase of the funerals in the second week of September, partly owing to the *Tertian fevers*, which became more formidable about that time; and a large share of the mortality in the following months is to be ascribed to diseases distinct from the Plague. The Plague

continued nearly in the same state from the last of September till the 12th of October, after which it declined considerably. It again increased about the 19th, and continued with little variation till November. The increase of the burials in the first fortnight of October was owing in some degree to the autumnal diseases, more especially to *malignant irregular Tertians* which were predominant at this time, and in their beginning a good deal resembled the Plague; but in the last week it was too considerable to be ascribed to the same cause, nor could it be ascribed to the increase of the contagion, supposing the same proportion of the infected to have recovered as in the former months. In order to account for this it must be observed, that the Plague at this period had undergone a remarkable change. Ever since the beginning of October the proportion of those who died had been greater than at any time since the month of June, and after the middle of October hardly one third recovered. The disease began to assume its most malignant forms, and sometimes proved fatal in less than forty hours.

“In this malignant state, with little or no variation, it continued through November and December. About the middle of December the weather was for some days serene and frosty, a change which produced no sudden alteration in the disease. A few days before Christmas it appeared considerably diminished; but this flattering interval was of short duration.

“A considerable share of the mortality through the winter was produced by diseases distinct from the Plague, more especially to anomalous Tertian fe-

vers. To these in November was joined the Small-pox, which carried off numbers of children. The decrease in the burials in the two last weeks of December was no doubt owing in part to the favourable alteration which took place in these diseases; but the Plague also must have greatly abated, for in its nature it was at this period more fatal than in the autumn: very few recovered, and some were said to perish within twenty-four hours, or less. In the bills of mortality I have not presumed to distinguish the pestilential burials, nor were my accounts sufficiently extensive to form an exact estimate of the degree to which the Plague had subsisted since the beginning of winter. The natives all agreed in declaring the Plague had never been known before so formidable at Aleppo in winter, and many affirmed it was the first instance of its being known at all in that season, but what had happened in 1742 was forgotten."

The Weekly Bills of Mortality at Aleppo 1761 and 1762.

1761.		1762.	
April.	1st week .. 58	Jan.	1st week .. 149
	2nd — .. 88		2nd — .. 100
	3rd — .. 125		3rd — .. 50
	4th — .. 113—384		4th — .. 66—365
May.	1st — .. 171	Feb.	1st — .. 45
	2nd — .. 139		2nd — .. 64
	3rd — .. 177		3rd — .. 82
	4th — .. 290—777		4th — .. 108—299
June	8. 670	March	8. 104
	15. 543		15. 112
	22. 505		22. 104
	29. 612—2330		29. 164—484
July	6. 708	April	5. 173

1761.		1762.	
July 13.	483	April 12.	165
20.	296	19.	240
27.	236—1723	26.	205—783
Aug. 3.	102	May 3.	257
10.	110	10.	303
17.	90	17.	254
24.	108—410	24.	296—1110
31.	66	31.	579
Sept. 7.	76	June 7.	710
14.	98	14.	874
21.	66—306	21.	1208—3371
28.	78	28.	1273
Oct. 5.	85	July 5.	1472
12.	106	12.	998
19.	66—335	19.	506—4249
26.	110	26.	379
Nov. 2.	156	Aug. 2.	232
9.	137	9.	136
16.	116—519	16.	112—859
23.	124	23.	71
30.	167	30.	68
Dec. 7.	166	Sept. 6.	66
14.	156—613	13.	42—247
21.	166	20.	48
28.	105	27.	68—116
Jan. 4.	99—370		

“The unexpected continuance of the Plague through the various changes of weather in the autumn, and hitherto in the winter, spread a gloom over the prospects of the new year. About this time the birth of an heir to the empire gave occasion to a festival of seven days, termed a *Zecny*, during which the crowds in the streets and bazars, both day and night, are great, and multitudes of both sexes resort to town from the villages, people of all ranks giving loose to frolic and revelry.

“ In the first fortnight of January 1762, the Plague remained nearly in the same state as in December. A good deal of snow fell on the 7th and 8th, after which a frost set in till the 19th. Though little was heard of the Plague during the time of the Zeeny, accidents nevertheless happened every day. In the third week of January the distemper certainly abated. It continued variably increasing and decreasing through February; and its advance, though not rapid, was more perceptible in March, particularly towards the end. In the second week of April it certainly abated in the Judeda. The Maronite Christians, encouraged by this alteration in their quarter, entered cheerfully on the 11th into their feast of Easter, nor could they be persuaded to omit the usual interchange of ceremonial visits. The Plague, it was said, had spent its force, and would make no great progress, because it seemed not to possess its usual contagious property; and in proof it was urged that the uncommon intercourse of all kinds of people during the Zeeny had been productive of no ill consequence; nor in the month of Ramadan, though the weather was become warmer, had the distemper spread to such a degree as might have been expected. About the middle of the month it was discovered that a number of the Christians had been infected during the holidays. The disease had not only increased in the Judeda, but within the city. It was becoming every day more contagious, and I met with several instances of the sick dying more suddenly than had been observed hitherto in the spring.

“ For two or three days before the Turkish feast

the disease certainly appeared to abate in the Judeda, while the decrease in the Turkish funerals indicated a similar alteration in the city. It appears from the bills, that in the second week of April they rose to 240, which was less by 60 than at the time the Europeans shut up the preceding year, and that in the next week they fell to 205. On the 26th the English Consul shut up, and none of the European houses remained open after the 7th of May. After the middle of May the distemper manifestly increased everywhere. About the first week in June a number of Armenian bakers were seized with Plague. These people lived dispersedly in the city, and in the course of the subsequent fortnight between 30 and 40 of them applied to me for advice. The Plague continued to increase universally in the third week. The higher districts of the Gilloom and the Akaby, and parts adjacent to the European khanes, which had hitherto remained remarkably free, began to be involved in the common calamity. Accidents at this time happened in several of the Jewish families who had shut up the preceding week. In some houses they appeared to be owing to the neglect of due precautions; in others the persons had received the infection before shutting up. The Plague still continued to increase through the fourth week of June. I heard of 10 or 12 instances where the sick were thought to have perished in ten hours after seizure; but in general the distemper preserved its usual period, and a large proportion of the infected continued as before to recover. In the first week of July it arrived at its greatest height. Three Armenian priests were taken in this week,

but what was more remarkable, a lay brother in the Jesuit convent, which had been shut since the beginning of May, was taken ill. He was the person employed in receiving provisions, and it was said had caught the infection from a man of whom he had purchased fish. It was the more probable that he had been guilty of some neglect, as none of the servants in the other European houses employed in like offices were infected.

“ The daily bills of mortality of July 5th to August 2nd were,—

July 5.	225	July 19.	78
6.	182	20.	55
7.	142	21.	56
8.	126	22.	55
9.	107	23.	42
10.	124	24.	48
11.	92	25.	45
12.	111	26.	38
13.	85	27.	45
14.	91	28.	37
15.	58	29.	32
16.	55	30.	24
17.	41	31.	25
18.	65	Aug. 1.	31

“ In the first week of July, commencing the 5th, the Turkish burials decreased one third, from 1249 to 833: the declension in the second week was still more rapid, for they fell to 430. After the middle of July I heard of none of the sick who died in less than three days' illness, but it was not observed that a larger proportion recovered than had done in the first fortnight. At the time the Consuls shut up in May the weekly bills were 257, and in the week succeeding, when all the Europeans shut up, they

had increased to 307. The distemper, then, was in a lower degree in the fourth week of July, when the bills were 232, than for some time before the Franks entered into confinement, and consequently there seemed to be the same reason for opening at this period that was urged for not shutting up earlier in the spring. But on the supposition of the Plague being equally contagious in spring and autumn, reasons might be assigned for the danger of infection being greater in the latter season, and that the risk in being exposed does by no means decrease in proportion to the diminution of the burials.

“Tertian fevers began to be frequent in July, as also another fever, which was represented to me as being of the malignant kind, distinct from the Plague, but which, on visiting the sick upon my coming out of confinement, I found to be one of the irregular species allied to the Tertian tribe. As to the Plague, it was very much diminished. Some accidents came to be known the first week of August which had happened the week before, but no fresh instances were heard of. In the second week it was reduced so low, that in the style of the Levant it might have been said to be over; nevertheless accidents came to be publickly known, which showed it had not absolutely ceased. The English opened their houses entirely in this week.

“It was currently reported in the European quarter, about the beginning of September, that there had been no pestilential accidents whatever for many days. The Turks talked less confidently, and were nearer the truth when they asserted, that though the

Plague had not totally ceased, it was but very rarely met with.

"The fever before mentioned had not only spread, but was become more fatal, and being attended by violent vomiting, and other formidable symptoms, was sometimes mistaken for the Plague. The Turk washers of the dead assured me that on most days they still met with infected bodies. From the middle of August a very small proportion of the infected recovered, a proof, from the state of the burials, of the decrease of the Plague, as a share of the mortality was to be attributed to the autumnal diseases. In the last fortnight of September, I met with only two pestilential accidents. Several others were talked of, but none after the 20th. After the 10th of November, the autumnal diseases abating, the burials universally decreased.

"Thus ended the Plague at Aleppo. It began to abate early in July; declined rapidly after the middle of that month, and disappeared at the end of September. I met with no pestilential accidents during the three subsequent months. There were not wanting, however, many reports of persons dying of the Plague, and some circulated with great confidence, which I found had arisen *from a mistake in the nature of the disease.* The buriers of the dead assured me they no longer met with dead bodies which bore the marks of infection. But it required some time to free the people of Aleppo from their fears. Through the winter sudden deaths were sometimes regarded as suspicious, and in most acute diseases anomalous symptoms were apt to raise alarm. Apprehensions of this kind subsisted

till March 1763, when perfect tranquillity was restored to the city.

“The progress of the Plague in its commencement is much the same in the Levant as in the cities of Europe: it advances slowly, fluctuating perhaps for two or three weeks; the disease, though generally at that period fatal, *often unattended by its characteristic eruption*, and the attendants on the sick often escaping infection. The increase and decrease of the distemper are always rapid, and in general it terminates earlier at Cairo than on the coast of Syria or at Aleppo. It is remarkable, both in Syria and Cyprus, that in the latter part of autumn, in the winter, and early in the spring, although the Plague had either ceased or greatly declined in the towns, it sometimes continued its ravages in the villages on the adjacent plains as well as in the mountains, and that even during severe frost. The villages appeared to suffer in a singular degree, owing perhaps to the structure of the huts and cottages, which are small, with few or no windows, and stand crowded together, like the *Keisarias* within the city, which are inhabited by the lower class of people, and in which the contagion spreads with great fury. The inhabitants of the city of the same class, but who live in districts where the houses are less connected, suffered more than the middling class, possessing more airy habitations, but less than the *Keisarias*. The people of rank, notwithstanding the promiscuous crowds frequenting their palaces suffered least of all. Neither the Governor, Cady, Nakeeb, and very few of the Agas of superior rank, were infected, *though the Plague had pe-*

netrated into most of their harems, and many of the pages and other attendants without doors were carried off by it. In these great harems, however, the contagion seldom spread much ; of perhaps forty females, not more than four or five being infected.

“Of all people, the Jews have the strongest dread of the Plague, and no places are more favourable to its propagation than the habitations of the lower class of that nation. The houses are small, or, if large, the different apartments are crowded with different families. Many are more than a story below the level of the street, half ruinous, dirty in the extreme, damp and badly aired, and the wretched inhabitants clothed in rags. When one of them is taken ill of the Plague, he is abandoned to the care of an attendant, and the rest of the family seek refuge at some distance. The families lodged in the other apartments, all not having it in their power to fly, avoid approaching the chamber of the sick, and restrain their children from going into the court yard. Thus pent up, they suffer all the inconveniences of the hot season in the midst of perpetual dread, till at length, what often happens, they are also attacked with the distemper.

“Several instances have been mentioned of persons infected in houses shut up : when such happened in the beginning of the confinement, in all probability the infection had been contracted before ; at a more advanced period, irregularities had been committed inconsistent with the rules of shutting up. Among the Europeans, (the one in the Jesuit convent, August 1761, excepted,) as well as in the houses of the native Christians of the better class,

no accidents were heard of. The priests of the several nations, appointed to attend the sick, escaped the infection the first and second years, but most of them died the third, when also several of the gravediggers and washers of the dead, who had resisted since the beginning of the season, perished; and it is the more remarkable that many of these accidents happened in the decline of the Plague.

“In the spring of 1761 the Plague had not reached the villages and towns north of Aleppo.

“It was at Antioch that year: at Byland in the latter part of autumn: at Scanderoon in October, where it remained till June 1762: it raged furiously at Urfa 1762: had not ceased at Byas or Adena in July 1762. At Maraash, two or three days’ journey from Aleppo, it appeared in the spring of 1761, did not spread much, and ceased in autumn: in 1762 it returned early in the summer, spread more, and continued in some degree all winter: in 1763 it increased in the summer, though not so much as in the preceding year: in 1764 it spread still less, but observed nearly the same progress, that is, was not at all or very little heard of in the winter: in 1765 it raged with more violence than ever, and, extending to the adjacent villages, made terrible havoc. The continuance of the Plague so much longer at Maraash than in any of the towns in Syria was a singular fact, nor was it less remarkable that so little of the matter should be known at Aleppo, *notwithstanding the constant intercourse subsisting between the two towns.*”

Before turning to the symptoms of Plague as described by Dr. Russell,—by which it will clearly ap-

pear that it is an *irregular Remittent Tertian*, with very variable eruptions, sometimes with no other glandular affection than the parotid, or than an enlargement of a subcutaneous gland in different parts of the body, or occasionally with a carbuncle, unattended by any glandular affection whatever, *the severity of the symptoms depending on the fever exclusively*, and not on those eruptions which are arbitrarily held to be essential to the disease,—I wish to recur to a few of the leading facts of the above narrative.

Russell derives the Plague of Cyprus and Syria from contagion brought from Cairo in 1759. But it was not only at Cairo that year, for he speaks of infected persons coming from Alexandria and Damietta. It appeared at Cape Baffo and Limsol in April 1759, and was attributed to a ship's crew from Alexandria who had been wrecked at the Cape. Yet the natives of Larnica (*with Plague patients in their streets and markets, and dying in their houses, coming from Alexandria, Damietta, Cape Baffo and Limsol,*) remained *perfectly free* of contagion from May 1759 to February 1760. The disease broke out by starts in the villages on the western and southern sides of the island through the spring and summer; invaded Nicosia, the capital, only twenty-five miles from Larnica, in October 1759. Yet Larnica was free till February 1760, when it and Famagusta, a place notorious for malignant fever, were attacked, at the time when Nicosia was regaining its healthy state; though the whole island besides was desolated by the epidemic till July 1760, when the sickness ceased.

The winter of 1756–7 was excessively cold; and

from December 1757 to June 1758, all Syria suffered from the miseries of extreme famine; and at Aleppo a malignant petechial fever prevailed from February to the autumn of 1758. This was a year antecedent to the Plague of Egypt, and proved that the causes of malignant fever were rife. That they gave rise to Plague first in Egypt would appear from Russell's account; but it is not a necessary inference that the subsequent Plagues of Cyprus and Syria were derived from contagion imported from Cairo; for if contagion could give the disease to the natives of Cape Baffo and Limsol, why did it fail to impart it to the natives of Larnica? why did the Plague of Tripoly in 1760 not extend to the villages round it? why did the Plague in these very villages in 1762 not infect Tripoly, which had been free in 1761, and remained free in 1762? why did not the Plague of Maraash in 1763, 1764 and 1765 infect Aleppo and surrounding places? and why did not the infected persons who came from the mountains in the winter of 1760-61 to Antioch, Shogre, Edlib and Aleppo, communicate that contagion, which was still said to be rife in the mountains, but which lost its power of infection in the plains?

These facts show the superior power of something (whether local causes in operation at the time, or variations of temperature exciting a disease, contracted from local causes in the preceding season,) over contagion; and the fate of Aleppo in 1760 as compared with 1761 and 1762, and that of Maraash in 1765 as compared with the four preceding years, show that contagion itself cannot constitute the exclusive elements of an epidemic; but that Plague,

like Intermittent and Remittent fevers, depends on causes separate from contagion, and that these causes, in both class of diseases, are equally variable, irregular and capricious in their visitations.

The Plague of Syria is first noticed in October 1759, at Saffat, Sidon and Acri. A messenger arrived at Tripoly from Sidon on January 10th, 1760, and dies of Plague, and some of the retinue of the Bashaw of Sidon, who visited Tripoly at the end of February are found to have the disease. The Plague at Tripoly is attributed to these imported cases ; but Russell candidly admits that on December 10th, 1759, thirty-one days before the first importation, two cases occurred in the town. Some said they were Plague, and others said they were not. Russell admits that the first cases are always without the characteristic eruptions ; therefore he would not deny they were Plague, and consequently the arrival of the imported cases in January and February cannot explain the cases in December ; and it is well known that persons leaving an epidemic atmosphere often fall ill of the epidemic disease on a change of air or climate ; and if the local causes at Tripoly were adequate to produce two cases of Plague in December, the subsequent arrivals and imported cases, and the native cases that appeared, may be regarded as coincidences, and not the last consequences of the first.

Other facts, taken in connexion with the Remittent and even Intermittent form of the fever in Plague, are highly instructive in the elucidation of the nature of this disease. I allude to the occurrence of Tertian fever, "irregular and malignant fevers

allied to the Tertian tribe" always appearing just as Plague is disappearing. This was the case at Aleppo in 1760, 1761 and 1762; and these fevers were often in the commencement like Plague; were mistaken for it; and the only difference consisted in the absence of the eruptions, bubo and carbuncle. Yet, after the appearance of these fevers, cases of Plague occur now and then. Why do they not extend by contagion? There is a morbid state of atmosphere implied by the fevers, to afford a fit nucleus for it. But the cases of Plague are few, and those of the fever many, and yet the Plague is most malignant. These facts would argue that the two diseases are mere modifications, and that Plague does not arise from a specific contagion.

From the account which Russell has given of the *symptoms* of the Plague, it bore a very striking resemblance to a Tertian fever of a remittent or, more rarely, of an intermittent type; and from this fact alone it might be confidently asserted that the disease was to be ascribed to the effect of malaria rather than to a specific contagion; that it was *endemic* in those places where it occurred, and not dependent on the accidental importation of a foreign cause. It is much to be regretted that no notice is taken of any forms of fever existing during the continuance of Plague, though in each year on its decline, *but previous to its total extinction*, a *malignant Tertian* is said to have arisen, and sometimes to have been mistaken for the Plague itself. The nature of each case was determined by the presence or absence of buboes and carbuncles, the existence of one or the other constituting Plague, and their

absence denoting a case of ordinary fever. Yet some exceptions to this diagnosis are met with, for if cases occurred with eruptions, either few in number or comparatively rare as to their fatality, there was a difference of opinion as to the nature of the disease, the natives considering such cases to be Plague, and the Europeans, as in the example of the French surgeon at Tripoly, entertaining a different opinion.

The question, however, whether fever formed essentially a part of Plague, does not seem to have admitted of a doubt in the mind of Russell; for he expressly says that it was "a constant symptom at one stage or other, with very few exceptions, varying however greatly in degree, continuance, and concomitant symptoms. It was usually preceded by weariness, slight shivering, confusion rather than pain in the head, the head-ache seldom rising high till the advance of the hot fit. The cold stage was in general short, and seldom attended with thirst or so much anxiety as in Tertian fevers; but the changes in the hot fit were more sudden, alarming and anomalous. Nausea, sickness and vomiting frequently attended from the beginning, but were not always present. In many cases the access differed little from that of ordinary fevers, so that except from collateral circumstances, (as the reigning epidemic, the patient having been in the way of infection,) a judgement could not be formed sooner than the second night, unless buboes or carbuncles were protruded within the first twenty-four hours.

"The fever usually declined on the morning of the *second day*, and sometimes a *second slighter cold fit* preceded the next exacerbation. It more rarely

happened that the cold and hot fits returned regularly, as in Remittent fevers, for several days successively, but irregular coldness of the extremities was more common. Instances of the Plague supervening in Intermittent fevers were rare.

“ The pestilential fever *in its most continued state* rose and declined several times in the course of twenty-four hours, and the changes were more sudden and various than in other fevers. The exacerbations were irregular as to time, violence and duration, but the mornings were generally calm, the nights disturbed. On the second or third day the patient was often reduced to the condition of one in the last stage of a malignant fever; yet to this desperate state would succeed a *remission*, in which his senses and intellectual faculties were restored, and all but weakness seemed to have vanished like a dream. Remissions of this kind were often short and fallacious, but when induced by a sweat, on the third day or later, of some hours’ continuance, they gave hopes of a happy issue, especially if the pulse did not sink, and the head was tolerably clear.

“ The delirium seldom rose to so high a degree of frenzy as in some other fevers. It came on in general in the second night, rose highest in the febrile exacerbations, lessening in the remissions into a rambling or confusion of intellect; and frequently went off entirely for several hours in the day-time, but returned with the evening exacerbation.

“ Coma sometimes attended from the access or in the advance of the disease, often alternated with the delirium, and was more dangerous, especi-

ally when it came on early and did not abate in the remissions. Loss of speech was not uncommon : faltering and trembling of the tongue seldom appeared earlier than the third day ; and an impediment of speech sometimes continued several months after recovery.

“ The eyes were muddy, sometimes from the first day, but more commonly from the second or third, and remained so till some favourable turn of the disease. It resembled somewhat the dull fixed eye in the last stage of malignant fevers ; but the dullness was different, *muddiness and lustre being strangely blended together*. It continued with little alteration in the remissions ; did not increase in the exacerbations ; but the eyes acquired a redness which added wildness to the look, and which abating or going off in the remissions left the muddiness behind. After a critical sweat it often disappeared suddenly, but where there was no visible crisis its disappearance was gradual. In many cases of slight infection the eyes retained their natural lustre.

“ The tongue often retained its natural appearance, or was white and moist ; or parched with a yellow streak on each side, and reddish in the middle, but never was observed to form so thick a fur, or become so dark, as in the advanced stages of some other fevers *. The dryness or moistness rarely corresponded with the febrile symptoms, for the tongue

* Dr. A. Russell says, “ The tongue in some was quite moist, and continued throughout like that of a person in health ; in others it was white, soon became yellow, then black, and was covered with a dry rough scurf or fur. Some had no thirst ; but

was often *moist* where the external heat was intense, and the pulse indicated high fever, and *parched* where the fever in appearance was inconsiderable.

"The general state of the pulse was low, quick and equal, sometimes fluttering and intermittent. In some bad cases it remained always low, or nearly natural; but it more commonly rose in the exacerbations on the first two or three days, and sometimes becoming full, open and strong, remained so till the remission, when it returned to its former state. In the more advanced stages, instead of rising in the exacerbations, it was very apt to increase only in quickness, and become so small as to be felt with difficulty. In some cases, which ran out several days, where other symptoms denoted much disorder, the pulse varied little from its natural state; but its variations were so sudden, frequent and incongruous with the other symptoms that there is much remaining for future observation.

"The breathing was seldom disordered, except in the exacerbations at the advanced stages. Foetid breath or cough were not observed. The sick felt no pain on full inspiration, nor was the pain at the heart increased by it. They were often observed to sigh, as if from oppression on the lungs, but it usually went off in the exacerbations.

"An indescribable sense of oppression about the præcordia was a constant attendant, except in

in general the sick suffered extreme thirst, but it never was constant, returned at irregular intervals, and seldom appeared to correspond with the degree of fever."—*Natural History of Aleppo*, vol. ii. p. 355.

very slight cases of infection ; and where it came on early, or persisted in a high degree, was always a dangerous symptom. The sick showed how severely they suffered by perpetually changing posture ; but when asked where the pain lay, they either answered hastily, they could not tell, or, with a fixed wild look, exclaimed, '*My heart, my heart !*' This anxiety increasing, ended at length in mortal inquietude, the patient for many hours in the last stages incessantly writhing his body and limbs as if in agony.

"The pain at the heart, though often joined with the former symptom, appeared to be different from it, and to exist separately. They often exclaimed, '*My heart, my heart !*' pointing also towards the *scrobiculum cordis* ; but would add, '*My heart pains me !*' or '*My heart is on fire !*' In the former symptom they sometimes pressed their own, or the hand of another to the breast, whereas in this they could hardly bear the part to be touched. This burning pain seemed to be seated about the orifice of the stomach, and, I was inclined to think, might be owing to bile or other acrid colluvies ; but on observing very often that instead of being relieved it was rather increased by vomiting, I suspected its continuance was to be imputed to a more fixed cause.

"The sudden loss of strength and disturbance of the functions of the brain and heart in a particular manner belong to the Plague, and in their highest degree distinguish the most fatal forms of the disease, and under different modifications adhere to all its varieties.

"Faintness was a very common concomitant, and sometimes terminating in syncope. Its early appearance was remarkable in the Plague, for in the advanced stages of other fevers it is very common, especially upon sitting up, but here the erect posture seemed to have less effect, nor was the faintness so soon relieved by lying horizontally as in ordinary fevers.

"The access of the fever was rarely attended with convulsions. Convulsive motions in the limbs were frequently observed; but *subsultus tendinum* was less frequent than in ordinary malignant fevers, though a continual trembling of the hands without startings was common. Hiccough was seldom observed, and sneezing not once met with.

"Of all the excretions, that by the skin would seem to be the most important in the Plague. When the skin remains perpetually dry, or when short and precipitate sweats are attended with no favourable alteration of symptoms, danger is always to be apprehended. On the other hand, sweats at certain periods appeared critical; were followed by a manifest alteration for the better; and by their repetition, the fever was carried off entirely, or reduced to symptomatic exacerbations, seemingly dependent on the eruptions. I never observed blood exude through the pores, nor was the smell of the sweat particularly offensive.

"Vomiting was absent in a large proportion of the sick. Where it appeared in the beginning, and continued with short intervals, it generally denoted a fatal termination. The matter ejected from the stomach varied: when the retchings were strong

and frequent, bile was sooner or later thrown up, sometimes accompanied with a bitter taste in the mouth, yellowness in the eyes, and other bilious symptoms; but in general, bilious vomitings were not so frequent as in the autumnal fevers. I do not recollect having observed foetid discharges from the stomach, probably owing to accident or inattention; nor vomiting of blood, though a *blackish liquor sometimes came off the stomach* in the last stage of the disease, in the production of which blood may have had some share. Nausea was more common than vomiting; but unless the tongue or other symptoms indicated bile or colluvies in the stomach, repeated retching, provoked by warm water, had little effect in removing it, further than they affected the skin. When a gentle sweat succeeded to these forced retchings, the nausea was lessened, and even spontaneous vomiting was often checked by a sweat.

“ A looseness came on sometimes the first day, but more commonly in the advance of the disease, and in either case, unless other circumstances were favourable, was considered a dangerous symptom. The stools for the most part were less foetid and offensive than in Tertian fevers, particular cases excepted, where bilious symptoms happened to predominate. Sometimes dark-coloured blood was discharged by stool unmixed with fæces, and without griping pains. Costiveness was attended with no harm.

“ Hæmorrhages, if not very slight, were dangerous; and most of the cases wherein they occurred, especially if late, terminated fatally. I saw them

only from the nose and uterus. A bleeding at the nose early in the disease gave little alarm in young plethoric subjects, unless profuse, and returning at short intervals. In the advanced stages, it seldom was profuse, but the blood was of a paler colour and thinner consistence; and petechiæ, vibices, and other symptoms of approaching death, were often joined to it."

Dr. Russell arranges the cases which fell under his observation in six classes.

1st. "The sick were attacked suddenly with loss of strength; confusion or weight in the head; giddiness; oppression at the præcordia; dejection of spirits, and anxiety. They were inclined to be silent; made few or no complaints; and having obscure or no febrile symptoms, were considered as slightly indisposed. They perished sometimes within twenty-four hours, or on the second or third day, and had neither buboes nor carbuncles *.

"Others in a few hours became more disordered: their eyes became muddy; the surface cold; they grew drowsy and lethargic, and complained of pain at the heart; often lost the power of speech; the skin seldom recovered heat, or if it did, it was in ir-

* "All the infected had buboes, except such as expired suddenly. Instances of this dreadful kind were more particularly met with in March 1743. The sick were seized in the usual manner; but the head-ache, vomiting, and pain about the præcordia increasing every moment, proved suddenly mortal, or terminated within a few hours in fatal convulsions." (*Natural History of Aleppo*, vol. ii. p. 354.)—Dr. P. Russell says, that "instances of sudden death in the Plague were very seldom met with in the late Plague at Aleppo, and then only in the winter or early in the spring."

regular flushings of short continuance, which soon gave way to cold clammy sweats. The pulse sometimes remained nearly natural, but for the most part was low and quick. They were by turns delirious, confused and sensible, but the comatous disposition was the most prevalent; and towards the end they suffered incessant inquietude. Some had a vomiting the first night; in others a diarrhoea supervened the next day, both accelerating the fatal period; but these symptoms were less frequent than in some of the other classes. Buboes appeared only in a very few, who survived the third day. Carbuncles were rarely met with before May, which was later than the period when this form was predominant. Petechiæ, vibices, or broad, livid, roundish spots were not common, and the two latter were seldom visible till after death. None of the sick recovered; most died the second or third day; a very few lived to the fifth.

“These destructive forms of the disease prevailed most at the rise of the Plague in 1760, and in its resuscitation in the spring of 1761 and 1762, decreasing always as the distemper spread; and though they were found dispersedly in every stage of the pestilential season, the number was very small compared with that of the others. The *total absence of buboes* in such patients as perished suddenly I have no doubt of, nor of *their being in general very rare* in others of this class.”

2nd. “The disease began generally with a slight shivering or sense of cold; soon succeeded by fever, giddiness, head-ache, vomiting, and sometimes looseness. The fever increasing in the night, the

face flushed, the eyes glistened, and the patient grew delirious or drowsy, and comatous. The pulse in this stage usually continued full and strong, the thirst excessive, stomach irritable; and the patient, harassed by vomiting, &c., passed a very unquiet night. Towards day-break the fever abated, and the sick grew more composed, usually recovering their senses after delirium, though disposed sometimes to ramble; but where they had been comatous, the morning remission was less distinct, and the lethargic disposition either increased in the exacerbations or alternated with delirium, so that they continued drowsy or rambling through the day. The pulse in the morning still kept up more or less full; the heat moderately feverish; the skin for the most part dry; and the patient, though less restless, was more dejected. As the day advanced, the pulse began to alter, and other symptoms characteristic of infection succeeded; as, the muddy eye; the peculiar confusion of countenance; a low, quick, equal, fluttering, rarely intermittent, pulse; tongue whitish, often unaltered, rarely parched; the heat moderate, or intense in irregular flushings; pain at the heart or oppression at the præcordia; burning pain at the pit of the stomach, and incessant inquietude. On the evening of the second day the symptoms became more and more alarming, for as the night advanced, all grew worse; and if towards morning the patient appeared more quiet, it seemed owing less to a change for the better than to his strength being exhausted by the dreadful inquietude of the preceding eight hours. It sometimes happened that there was a tolerable remission on the morning of the

third day, which revived the hopes of the attendants; but the calm was of short duration, the exacerbations returning with equal or increased vigour. Where the debility had been hastened by vomiting, looseness, or hæmorrhage, the third day proved fatal; but the disease was more commonly protracted two or three days longer, advancing so far regularly that each night was worse than the preceding, and the calms or remissions in the day so transient or obscure, as to leave no room for hope. None of the sick recovered. Buboës made their appearance commonly the second day, oftener the third, sometimes later: *a very small proportion of the sick were without eruptions*. The buboës never approached maturation, and their advancing or not had no visible effect in hastening or retarding the disease. *Carbuncles were not common*; petechiæ and vibices were sometimes met with; and livid marks on the corpse more frequently observed than in the first class."

3rd. "In this class vomiting and looseness never attended from the beginning; the fever in general did not rise so high the first night, nor was it accompanied with delirium, and the comatous disposition seldom came on before the second or third night. The morning remission on the second day *was more distinct*; the succeeding exacerbations through the day less formidable; the accession of the pestilential symptoms later, and their progress less rapid. The second night, however, was always a bad one, the patient being either delirious or lethargic. A gentle sweat early in the morning of the third day produced a change in appearance so favourable as to give some dawn of hope; but the

quick recurrence of exacerbations more severe than ever, gave a surer presage of what was to be dreaded; during which the pulse was usually low and quick, or rose by starts, being much more variable than in the first two days. Sometimes a disposition to sweat was observed towards the end of these exacerbations, especially in the mornings; but in general the skin remained dry, or the sweat was short and ineffectual. The course of the disease on the fourth and fifth days was nearly the same as on the third; the nights restless and the remissions more obscure. In those who survived the fifth day, the febrile symptoms continued high, the pulse kept up, and there was often a tendency to sweat, insomuch that appearances were sometimes so favourable as to render the death of the patient on the seventh unexpected. Buboës for the most part appeared earlier, though sometimes retarded to the third day, and the cases were very rare where they did not appear at all. In regard to carbuncles, vibices, petechiæ, and livid spots after death, nothing need be added to what has been remarked under the second class. None of the sick recovered. Few died sooner than the fifth day. In such as died on the fourth, the comatous disposition had come on early with other bad symptoms, as faltering of the tongue, loss of speech, and sometimes petechiæ. The day most commonly fatal was the fifth, but a few lived to the seventh or eighth. The course of symptoms from the second or third night in this and the second class of cases varied very little, and the termination of the disease was the same in both. They reigned together through all the periods of the pestilential

season, but were most prevalent in its augment, for at its height and in its decline, they gave place to less destructive varieties."

4th. "This class was the most numerous of all, comprehending those forms of the disease which often underwent various and sudden changes in their course. The distinctive marks of it were the continuance of the inflammatory or febrile symptoms, with less interruption than in the former class; a pulse more constantly sustained; the exacerbations decreasing in the advance of the disease; and above all, the prevalent tendency to critical sweats on the third, fifth, or subsequent days. But though in general the absence of a tendency to sweat was an unfavourable sign, instances of recovery without any sensible discharge from the skin occurred. The phænomena attending the access of the disease were nearly the same as in the two former classes. Vomiting occurred in about one fourth of the sick. The fever, for the most part, was very moderate the first night, very rarely accompanied with delirium or coma. No certain judgement could be formed of the event from the access. Buboës and carbuncles commonly appeared the first day, but it was not unusual to see a successive eruption of them. *The remission on the morning of the second day was generally less obscure; as the day advanced the sick became more unquiet, changing variously at short intervals; sometimes in the forenoon a more regular exacerbation came on without any preceding sense of cold; the pulse rose; the head grew more confused, and some showed a slight tendency to coma. The external heat was*

temperate, tongue moist, and yet they complained of thirst; at other times they had no desire to drink, though the pulse, dry tongue, and heat of the skin denoted a higher degree of fever. This exacerbation usually declined with a partial sweat; but the patient in appearance was more disordered, complained of oppression at the heart, and of illness he could not describe. As night approached he grew worse; the heat was more intense; pulse less full but very quick; the inquietude increased; the eyes became muddy; and he was much disposed to talk incoherently, or to slumber. Sweat breaking out early in the morning mitigated the symptoms, in proportion as it was more or less profuse; and even without a sweat some mitigation was observed. The morning sweat *on the third day*, in some cases, proved *critical*; but more commonly produced only so favourable a *remission*, as to encourage the expectation of a more perfect crisis on the fifth. In the remission alluded to, the pulse not only became slower, but softer and fuller, especially after the sweat; and though the eyes were still muddy, the anxiety and inquietude had abated; the intellects clearer, and the patient found himself every way better. The exacerbations in the third day, though not protracted, were pretty severe, and the third night was again disturbed. The remission on the morning of the fourth day was sometimes preceded by a sweat, on which its duration seemed to depend, but the sweat was never so profuse as that of the third or fifth day. The exacerbations which followed were nearly the same as the day before, but the nocturnal one was more severe, and continued till a

profuse sweat broke out, which left the patient extremely faint and languid, but in other respects manifestly relieved. After the sweat on the fifth, the exacerbations became slighter and slighter, and the buboes advancing favourably, little or no fever was left after the beginning of the second week. But when the sweat on the fifth proved imperfectly critical, milder exacerbations, usually declining in gentle sweats, recurred till the seventh day, when a second profuse sweat placed the patient beyond all danger.

“The symptoms described on the second day were sometimes kept back till the third or fourth, and then a critical sweat did not occur till the fifth or seventh; or they were retarded later than the fourth, and the future course of the disease was more irregularly various, the exacerbations declined with or without sweat, and the patient passed slowly through the fever without any sensible critical evacuation whatever. The buboes for the most part came to maturation, but generally the fever had disappeared long before, and in cases where they had dispersed, there was very little difference observed in the course of the fever, if the patient had sweated, or in the quickness of the recovery; but where no critical sweat happened, recovery was slower. There was no instance of any particular tendency to relapse where the buboes had dispersed. Hæmorrhages, looseness, petechiæ, loss of speech, &c., enhanced the danger as in the former classes, but exceptions were met with. The forms of the disease included in this class began to prevail before the Plague had reached its height, and continued

till its cessation. More than one half of the sick recovered."

5th. "In this class the *more formidable pestilential symptoms were absent*, and all the sick recovered. *The eruptions gave the first alarm*, and the fever was often so slight as not to confine the sick to the house. But the disease did not always invade so insensibly. Sometimes the febrile symptoms for the first three days ran pretty high, and the fever, particularly in nocturnal exacerbations, lasted a week or longer; but there were no alarming symptoms, and the exacerbations, terminating for the most part in sweats, gradually diminished in force after the third or fourth night. *All the infected had buboes or carbuncles, and often both*; the former dispersed in one third of the sick, and the dispersion was never observed to be attended with bad consequences; the latter formed the black crust, and then suppurated. This class was nearly as numerous as the fourth, but began to be predominant rather later, and reigned most of all in the decline of the Plague in 1762*."

* Dr. A. Russell says, "Nothing could be predicted respecting the event of the disease from the manner of its invasion, those who had the most favourable escape having often been attacked with as alarming symptoms as others who died in a few hours. Sometimes the febrile paroxysm, which had set in with such formidable violence, dissolved in a few hours, and left the patient extremely languid and weak, but free from other complaints, except the pain from the bubo, which from that time increasing in size and advancing favourably to maturation, was in many cases ready to open in twelve or fifteen days, the patient all the while, except the first day, walking about as usual. Great numbers happily escaped, not only in the manner just described, but likewise when the buboes never advanced; for these tumours, so far from

6th. "This class being reserved for such cases as were dubious, anomalous, or extraordinary, admits of no general description." Dr. Russell refers 20 of his reported cases to this class; and as some of them are highly interesting, I shall record them, to render the history of the disease complete.

It has been made sufficiently apparent, that if Plague is to be considered a fever, its character at Aleppo was that of a *Remittent Tertian*, more or less irregular, fatal sometimes in the congestive form, especially in the spring and in the winter of 1761 and 1762. That the fever was considered by Dr. Russell the most dangerous part of the disease is evident from his observations on the character of his fifth class, in which fever was either absent or slight; for he says, "*the more formidable pestilential symptoms were absent*," and yet "*all the infected had buboes or carbuncles, and very often both eruptions concurred in the same subject*." These eruptions, then, were not in themselves *formidable symptoms* * in his judgement; and in fact, from his own admission, were not essential to the disease, for they were not only absent in all the cases of the first class, but in some of the second and third. He expressly says that carbuncles "*were not common*" in patients of the second class, and that "*the course of the buboes*

coming always to maturation in such as recovered, very often discussed without any bad consequence, and the carbuncles often began to digest before the fever terminated in a critical sweat." —*Natural History of Aleppo*, vol. ii. p. 353.

* Dr. Russell, in speaking of Geoffroy's observations on the Plague at Marseilles, distinctly says, "He ascribes too much to the tumours (buboes), as if the alarming symptoms arose chiefly from the state of the morbid glands."

was of no material consequence; . . . their advancing or not were circumstances which had no visible effect in hastening or retarding the termination of the disease." Yet all the cases in the first, second and third classes were fatal, evidently from the violence and uncontrollable influence of the *fever*; for in the fourth class, where it was more regular, tending to critical sweats on the third, fifth, or seventh day, more than half of the sick recovered; and in the fifth class, where the fever was absent or slight, *though all had buboes or carbuncles, or both, none died.* It is evident, therefore, that at Aleppo fever constituted the mildness or severity, the less or more formidable character, of Plague, and that this fever was, when developed, of a tertian type and remittent, and consequently as legitimately referrible to malaria as the regular and irregular Tertians which occur in other countries, where the bubo and carbuncle are comparatively rare. It will be seen from the following cases that the fever was sometimes distinctly Intermittent, beginning or ending as such:

Case 42. "A girl, eight years old, who for ten or twelve days had laboured under a *regular Tertian*, was seized on the 5th of June 1762, with her usual paroxysm (as her attendants believed), but they were alarmed on finding the fever did not decline at the customary period. The fever continuing all the following day, a bubo was discovered in the right groin. The third day (June 7th) her face was pale, but the eyes not muddy, her countenance rather that of one who had been sick some time of a chronic disorder than of one infected. Her tongue was white, her body regular, and she neither had

nausea nor had vomited. The fever was attended with irregular exacerbations, but had not intermitted. The bubo was painful, and had increased in size. Some medicines were ordered, but I heard no more of her."

Dr. Russell's observation on the third day, of the fever not having intermitted, evidently applies to the time intervening between the fifth and seventh, as he only saw the child once, and she had "*a regular Tertian.*" He considered it a case of Plague sub-vening on an Intermittent, and remarks that he "had occasion to see few instances of the transformation of other diseases into the Plague."

Case 41. "A lady, twenty-eight years of age, of a plethoric habit, had been indisposed early in April, 1762, with an Intermittent fever, which, after a few paroxysms, was removed by bark. On May 14th, while sitting at work on her divan, she felt an obtuse pain in her forehead, like what used to precede the fits of the Intermittent, and she was sensible of an uneasy sensation in the left hypochondrium. At 2 o'clock P.M., two hours after she first felt the pain, a hard tumour was discovered near the crural vessels. At 4, her extremities became cold, she complained of lassitude, and of pain in her legs and shoulders. Her arms and hands recovered their warmth in about two hours, but the legs remained cold. I advised her to be bled as soon as the legs should recover warmth. After the bleeding she complained of pain and confusion of head, but the fever was moderate, though after midnight she became more unquiet till towards morning, and was then better, though she did not sweat.

“On the second day she was tolerably calm in the morning, but complained of a loathing and bad taste in the mouth. From the time she took a diaphoretic draught, she remained mostly as if dozing, and for some time after the exacerbation came on at noon, they found a difficulty of rousing her, though she afterwards convinced the attendants that she had heard what had been said to her, and that she had voluntarily laid in that manner, as the least motion or attempt to sit up greatly increased the disorder in the head. In the exacerbation her cheeks were flushed, the eyes red and sparkling. In the evening she appeared much worse, complaining chiefly of extreme anxiety or oppression at the heart. She took a diaphoretic mixture every five hours, and an acidulated cordial occasionally. Two carbuncles had been protruded this day on the left hip and thigh. She passed the first part of the night very unquietly; the fever after became more moderate, but she could not sleep, complaining of her head and of pains in her limbs; the oppression at the heart continued, but was always mitigated by the cordial. Towards morning the head and breast sweated a little.

“On the morning of the third day she complained of a bad taste in the mouth, the bubo remained as before, the carbuncles spreading. About 10 A.M. her hands became cold and livid, and the anxiety at the præcordia increasing, she fell into a long fainting fit, and on recovering from it complained of violent pain in the left side, and was languid and faint till 4, at which time she had little or no fever or thirst, but her stomach loathed everything. She

passed the night with very little fever, but did not sleep, nor did she sweat towards morning.

“On the fourth day the faintness and languor were much diminished, but she was disposed to fall into the same drowsiness as on the second day; this going off, she passed a tolerably good day. The superior carbuncle discharged a little matter. In the night she had hardly any fever, little rest, and did not sweat.

“On the fifth she was remarkably better, slept two or three hours, and her head and neck sweated a little, and the bubo had decreased in size. In the night she was more unquiet than usual, the feverish heat was moderate, and she showed no disposition to sweat.

“On the sixth day at noon a violent *exacerbation* came on, which continued till evening, and then declined without sweat; the fever high, and she complained much of internal heat. The fever increasing as night advanced, she became languid, and suffered much from headache and thirst till between 4 and 5 in the morning, when a profuse sweat broke out, in which she remained two hours, but growing low and faint, the attendants checked it by shifting her clothes.

“On the seventh day, between 9 and 10 A.M., she had a *short chilly fit*; after which the fever increasing, she became very unquiet, sometimes delirious till noon, when a breathing sweat on the head and breast mitigated the symptoms, and she recovered her senses, but remained feverish. Towards evening she grew worse, the fever rose high, she insisted on sitting in a chair and walking about

the room, but talked coherently, and expressed much satisfaction at finding the oppression at the præcordia lessened. She became remarkably better before bedtime, passed a tolerable night, and towards morning, after a gentle sweat on the upper parts of the body, the fever seemed to disappear *entirely*.

“On the eighth the noon exacerbation was very slight, the bubo gave little pain, was half its former size, and she passed a tolerable night.

“On the ninth at 8 A.M. she had a *cold fit*, slighter than that of the seventh, and the succeeding fever was less severe and shorter, though she complained greatly of the oppression at her heart. She grew feverish towards evening, and was restless all night.

“On the tenth, not having sweated, the fever in some degree continued. She seemed extremely sunk, and complained much of oppression at the præcordia. At 2 P.M., after taking a draught of spiritus mindereri, a sweat broke out, and continued two hours. She passed a tolerably quiet night.

“On the eleventh the fever continued slightly till noon, when it disappeared without any sensible sweat, the bubo decreasing and the carbuncle healing. On the twelfth the only complaints were weakness and loathing. On the fifteenth it is remarked she had been feverish for two nights, but was generally relieved by sweat in the morning or forenoon; both carbuncles were healed, and the bubo discussing. At night a pain in the left shoulder, which she had felt on the fifth, returned, and a hard swelling was discovered in the left axilla the

next day. The swelling disappeared on the twenty-first day. From the twenty-third she recovered slowly, being subject every two or three days to febrile exacerbations. On the thirtieth the remains of the inguinal bubo could hardly be distinguished by the finger.

"This lady had a child two years old at her breast, which she continued to nurse all the time of her illness without communicating infection. The indications for purging in this case were strong, and I expected a diarrhoea in consequence of the neglect, but the event showed I was mistaken. I still considered it as proper, and ascribe several of the symptoms in the exacerbations to bile in the bowels: to that perhaps also may be imputed the manner of accession of the febrile paroxysms, resembling remarkably those of *Intermittents*."

The interest I attach to this case is the evidence of its intermittent character. The patient had had Ague in April, and in May she relapsed. That her fever was an irregular Tertian appears from the coldness complained of on the first and third days, this symptom often occurring in irregular Intermittents instead of the usual rigor. She was better on the fifth day, and sweated for the first time. A violent exacerbation came on on the sixth, but went off with a profuse sweat at 4 A.M. on the seventh, and on that day and on the ninth there was a *regular rigor*. On the eleventh the bubo was decreasing and the carbuncles healing.

The 23rd case is one referred to the sixth class by Dr. Russell; and its peculiar characteristics were a remarkable coldness of parts of the body, not

attended by rigors nor followed by any marked degree of fever. On the seventh day "the patient's pulse was extremely sunk, and his extremities had remained as cold as ice for the last twenty hours. What surprised me most was to find so little alteration in his eyes and countenance. I visited him at noon to search for eruptions, but none were discovered, though I carefully examined the parts. The legs, thighs, arms and back were quite cold; sensible when touched; and the patient was ignorant of their having lost their warmth. The breast and belly retained some heat. On the morning of the 8th, the eyes had become muddy, the pulse more sunk than ever, the skin universally cold and clammy, and he died at 4 P.M. It was asserted by the person who washed the corpse, that there was a small bubo in one axilla. This, if true, must have protruded after I searched him on the 7th."

This case approaches that anomalous form of fever which Cleghorn alludes to under the name of *Lipyria*. Dr. Russell considered it a case of Plague. "I do not think eruptions were requisite in this case," he says, "to determine the nature of the disease; at the same time several symptoms were absent which usually attended the Plague. The muddy appearance of the eyes came on very late; the inquietude was not so great as it usually is when the pulse is so low and the surface cold; the patient, moreover, was more constantly in the same state, without those sudden transitions which so commonly attend pestilential cases. The pain he felt on the sixth day when the præcordia were pressed was a common symptom in the *epidemic fever which at that time*

was prevalent in the city ; the surface of the body often, also, in that fever continued long cold, but the sick were more or less relieved by discharges of bile; the febrile exacerbations were more manifest; the senses more disturbed; and none perished in the manner of this patient."

In this case, then, there certainly was no bubo on the seventh day, and probably, from the sunk condition of the patient, none afterwards; there was no carbuncle, and the symptoms in many respects were different from those usual in Plague, and in some particulars like those of the *epidemic fever then prevailing in the city*, yet Dr. Russell thought it was Plague. I quote it to show how difficult it is to say what is or is not Plague.

In case 25, we have an example of the loss of speech, usually considered one of the most formidable pestilential symptoms; a bubo in the right axilla, and coldness of the hands and feet, headache, giddiness, and indescribable illness; yet, as recovery took place on the third day, the case is referred to bile, and not considered pestilential. Dr. Russell gives it as "an example of many of the same kind during the whole of the pestilential season, which not only occasioned much confusion in families, but a good deal perplexed the medical assistants."

"A youth, October 27, 1761, on rising from bed, was seized with a giddiness, but, conceiving it would go off, he went out to open his father's warehouse. Finding himself worse, he determined to return home, and before he had got half way the giddiness increased to such a degree as to render him incapa-

ble of getting further without assistance. As soon as he got to bed he became extremely unquiet, writhed his legs and arms as if in pain, and said he was extremely ill. In half an hour he lost the use of his tongue, his hands and feet became cold, but his face, naturally ruddy, retained its usual bloom, though he seemed hardly sensible, as if in a fainting fit. Vinegar was applied to the nose and temples, which appeared to revive him a little, but he still remained speechless. I saw him at one, lying composedly in bed as if asleep, his countenance unaltered, and respiration undisturbed; pulse low, somewhat quicker than usual, and perfectly equal; the extremities still cold. He had partly recovered his speech, but was only able to give an indistinct account of himself, further than that he was unwell, and his head so giddy that he could not bear to have it raised from the pillow. He felt headache, pain at the pit of the stomach, but made slight of them, compared to the giddiness, and to illness which he could not describe, and he felt appetite for food. The tongue was moist, *not discoloured, which it usually is when bile is lodged in the stomach.* I ordered warm water, to excite vomiting, which failed in that effect, but seemed to be of service as a diluent, for he found himself better for it. I searched without discovering any tumours, except one small, hard, moveable gland in the right axilla, which being indolent on pressure, and so small, that, joined to its not being painful, I could not declare it an incipient bubo. The other symptoms were, however, suspicious; more especially as the Plague then existed in the Vizier's khane (where the father of

this boy had his shop,) and in many other parts of the city. I therefore suspended my opinion, but recommended precaution to the family. About 4 P.M. he had had one stool, his extremities had recovered some warmth, but he seemed strangely averse to speaking, though he answered distinctly when spoken to. He took a diaphoretic mixture, and before night his extremities had recovered their natural warmth. On the second day he was calm, pulse natural, heat temperate, but the tongue was yellowish, and he complained of a bitterish taste and dryness of the lips. In the evening he was a little feverish. On the third day he was well. A purging potion had operated two or three times. The swelled gland remained as before, and possibly might have been long in the same state."

How far the mere disturbance of the system from bile could give rise to the symptoms in this case, I shall not stop to inquire. If the presence of glandular swellings is to be considered characteristic of Plague, it probably should be ranked as such. But the fact is, that there is no fixed criterion of the disease; sometimes the anomalous fever without eruptions is so called, or the eruptions with slight fever; but when both are trifling in appearance and their effects, there is a doubt as to their being pestilential.

Case 52. is remarkable for the number of the eruptions, and the absence of all other formidable symptoms. "A baker was seized on the 9th of June 1762, and on that and the following day *eight carbuncles* were protruded in different parts, and a bubo in the right groin. The fever ran high at first,

but was not attended with vomiting, and his body was regular. On the third day the fever was slight, diaphoretics were given, and he sweated a little in the night: on the fourth he was as on the third, and from this day took no medicine, and by the 13th was free from all complaints, except pain from the eruptions *."

Case 53, like No. 25, was characterized by faltering of speech and a bubo in the axilla. "An elderly man complained on June 14, 1762, of weariness, weight in the head, and a sensation of cold running down the spine. Fever succeeded, a bubo was discovered at night in the left axilla, and his tongue faltered. He was bled on the 15th, and passed a very unquiet night, but was more composed on the 16th; had not vomited; no looseness; but the faltering in the speech continued; the fever was much abated, and the bubo very painful. A severe exacerbation came on at noon; the fever rose high; he entirely lost his speech; grew rapidly worse towards evening, and died in the night." It is evident that the only difference between this case and No. 25. is in the severity of the fever: the slight one recovered on the third day, and was not Plague; this was fatal, and therefore Plague of course.

With respect to the *eruptions* in Plague, the most characteristic, according to Dr. Russell, are the bubo, either inguinal, axillary, or the parotid, and

* In the Plague of Marseilles, Verny reports the case of a woman who had twelve carbuncles and two buboes, and who recovered without any other formidable symptoms.—*Traité de la Peste*, p. 289.

the carbuncle, which, however, occurs *only in about one fourth of the infected.*

The first class of his patients "never had buboes or carbuncles, and they were absent in a few of the second, when the disease was quickly fatal." Carbuncles alone were rare. The following Table shows the proportional frequency of the several eruptions in 2700 cases.

	Buboes.				Carbuncles.
	Inguinal.	Axillary.	Parotid.	Spurious.	
Men	835	206	58	23	194
Women . .	641	180	57	24	150
Children .	365	183	116	27	146
Total . .	1841	569	231	74	490

The following Table shows the proportion of cases attended with parotids, spurious buboes, and carbuncles. 1st, *simple*, or where they were the *sole eruption*; and 2nd, *complex*, or joined with inguinal or axillary buboes.

	Parotids.		Spurious Buboes.		Carbuncles.	
	Simple.	Complex.	Simple.	Complex.	Simple.	Complex.
Men	27	31	11	12	29	165
Women . .	36	21	11	13	27	123
Children .	67	49	15	12	29	117
Total . .	130	101	37	37	85	405

It would appear from these Tables that inguinal buboes are the most common, but that they did not occur in 859 cases. They cannot, therefore, be said to be pathognomonic of Plague.

By the second Table it appears that there were 130 cases of Plague, in which *the only eruption* was a parotid. I would ask in what respect these cases differed from the examples of the pestilential fever of Italy, and the Typhus of this country, in which this glandular symptom appears? There were also 37 cases in which the sole eruption was the spurious bubo! and 85 cases in which there were no swellings of the glands at all.

Of the 130 cases in which the only eruption was a parotid, 67 were in children under ten years of age, and the parotids are said to be "chiefly incident to children, and to youth of either sex." Does this imply that the disease was milder? It is established by Louis, that Typhus is less fatal in the young: and if the age of those in whom the parotid appeared at Aleppo argues a mild disease, it might be urged that the parotid, which was common to them, is the mildest specific symptom of Plague; and hence the pestilential fevers of Italy, and the Typhus of Great Britain, which not unfrequently exhibit the parotid, are, like similar cases at Aleppo, mild modifications of Plague.

The spurious bubo was a small, hard, glandular swelling under the skin of the head, forehead, throat, shoulder, clavicle, back, side, belly, &c. It sometimes dispersed, but generally suppurated. The other eruptions noticed by Russell were boils, petechiæ, (said not to be common,) a marbled appearance of the skin, coming and going, rarely an erysipelatous redness of the skin, sometimes narrow streaks of a reddish purple or livid colour; vibices or weals, as if the effects of blows or stripes, ap-

pearing before or after death ; large blue or purple spots, round or irregular, appearing just before death or on the corpse ; and the whole skin of the thighs, back and shoulders often turned livid while the body was yet warm.

The Plague, Russell admits, is liable to relapse, or, to use his own language, " persons are liable to be infected more than once, not only at long intervals and in different climates, but in the same town in the course of the same pestilential season." This circumstance affords another affinity between it and malarious fever. Out of 4400 cases, 28 relapsed or were reinfected, 1 in 157. He admits that the contagion may be communicated through the medium of the air, and consequently that contact is not essential to the propagation of the disease.

CHAPTER IV.

PLAGUE OF NIMIGUEN.

To contrast the Plague of Egypt and of Syria with the same disease in a more northern latitude, I shall quote that of Nimiguen, about lat. $51^{\circ} 49'$, in which the fever was generally of the continued type.

Diemerbroeck *, in his learned treatise on the Plague, expresses his own belief of its arising from atmospherical causes ; of its being communicated *without* contact ; and of powerful impressions upon

* Isbrandi de Diemerbroeck, *Tractatus de Peste* ; Amsterdam 1665, 4to.

the mind, or of ordinary disturbing causes affecting the general health, operating apparently as exciting causes of the epidemic disease; and in one instance, he says, it arose in Holland, independently of imported contagion.

The speculative notions he entertains on many points are of no other importance than as they bear upon the origin of the disease, which, in later times, is attempted to be explained by contagion from contact, an opinion contrary to that of many early writers. He assigns three causes of pestilence: 1st, "*Justissima Summi Dei ira*;" 2nd, "*Malig-nissimum occultum venenosum pestilens seminarium, cœlitus demissum*;" and 3rd, "*Contagium*:" and he adds, "*secunda à primâ, tertia à secundâ descendit*."

The celestial poison is the original source of Plague, and the secondary causes which predispose the body to its operation are offensive exhalations, unusual heat, dryness, the prevalence of southerly winds and calms. He distinctly says that the first case of Plague does not proceed from contagion; but that the disease, once produced, may be propagated by it; and he admits that anger, terror, fear, grief, sudden joy, melancholy, are exciting causes.

In allusion to this supernatural taint of atmosphere, he says, "*Nos arbitramur Hippocratem per se suos intellixisse causam quendam morbificam, præter naturæ ordinem, à Diis e sublimi immissam, vel in et ex aere de novo ab ipsis suscitata;*" and he adds, that it is to be considered "*exiguum quid, quod instar acerrimi fermenti sese dilatans, aerem hic illic certo modo corrumpere atque se longe lateque diffundere potest: quia, cum Pestis sit morbus*

communissimus, ejus causam *aeri inesse plane necessum est*. Sic etiam Hippocrates veræ pestis causas *in solo aere* statuit." (pp. 47, 49.)

After arguing at length whether or no this supernatural taint be renewed from time to time, as a punishment for the sins of mankind, he says, (p. 28.) "Atque ita ex omnibus his satis liquet, Summum Deum pestilens venenum de novo in sublimare mundum introducere; idque ex contagio aut fomite non suscitari. Hujus rei veritatem confirmat ipsa ratio. Nam si pestis à contagio semper excitaretur, fieret vel à contagio in aere hærente vel in fomite latente. Non ab *illo*, quia venti et radii solares aeris squallores purificant, ita ut noxia illa contagiosa miasmata longo tempore in aere conservari; multo minus integris viribus ad longinqua loca deferri nequeant. Non ab *hoc*, quia si pestis produceretur à solo contagio in fomite asservato, necessario cum urbem vel regionem aliquam invaderet, ibi perpetuam sedem figeret; nam in constitutione pestilenti semper innumeri fomites in ædibus infectis asservantur, ex quibus commotis identidem varii contagio inficiuntur, scilicet quousque pestis in vigore est: sed declinante vigore etiam imminuitur infectio: ac denique cessante peste, fomites passim commoventur vel sine vel cum valde exigua noxa."

To this atmospherical taint he equally refers famine, a putrescency of the humours, and the malignant and pestilential fevers which precede the Plague. As the connexion between these diseases is a subject of deep interest, especially as they are almost universally found associated together, I shall quote the opinion of Diemerbroeck, who evi-

dently considers them as gradations of an effect from a common cause. He says, (p. 55.) "*Porro sicut interdum partis alicujus phlegmone paulatim augeatur, et transit in gangrænam, hæcque paulatim in sphacelum: sic quoque à primi inquinamenti pollutione aer corrumpitur et inficitur per gradus, donec tandem magna illius pars venenositatem, primo inquinamento similem, acquisiverit, atque tunc demum fit apertissima pestis. Nam aer ille non putridus sed venenatus existens, pestilenti sua venenositate corpora facillime inficit, et statim post invasionem innatum calorem impugnando, viscerumque actiones lædendo seu depravando facit ut humores amplius nec bene coquantur ac in salubri statu conserventur; unde plerumque graves eorum putredines citissime inducuntur, e quibus tunc ilico procedunt febres istæ putridæ pestilentes, quæ pestem mox sequuntur vel comitantur, idque sæpe tam cito ut multoties pestis et febris simul invadere videantur: quo errore nonnulli putarunt pestem esse febrem, eamque per febrem definierunt.*"

This passage may be applied in two ways, either to the fevers which precede the appearance of Plague as an epidemic, or to the febrile symptoms which accompany those eruptions that are arbitrarily considered as characteristic of Plague. If it be considered applicable in the second sense, it is of some importance, as implying that fever of a chronic character supervened to Plague, as it was presented to the observations of Diemerbroeck in Holland, a fact which would ally it to Typhus. In Egypt and at Aleppo there is no evidence of any continued fever like Typhus attending the Plague. Such cases did

occur in the Plague of Nimiguen, and the importance I attach to the fact is, that in this respect the law of fever with respect to Plague in Europe is like that which fever observes in America, viz. that it generally assumes the intermittent and remittent types in the southern, and the continued form in northern latitudes. Diemerbroeck distinctly says, that in the Plague of Nimiguen the fever was continued.

His views of fever are derived from the old humoral pathology, in which it is very difficult to say what is to be retained or rejected. As to the putrescency of the humours, which he supposed gave rise to pestilential fevers, he will not admit that any increase of it could generate Plague; for at p. 56. he says, "*Probavimus pestem non induci ab aucta putredine illarum febrium pestilentium quæ pestem antecedunt: sed illam putredinem oriri ab eodem aeris inquinamento (sed intensioris gradu minore) à quo et ipsa pestis producitur;*" an opinion which proves that he attributed the pestilential fevers and the Plague to a vitiated state of atmosphere.

In the contagiousness of Plague, Diemerbroeck was a staunch believer; but from what I have already quoted as to his opinion of the origin of the disease, it will be seen that he cannot be considered as an authority for the modern doctrine, which imagines the constant occult existence of Plague somewhere in Africa, whence it emerges on occasions to desolate Europe, in which no Plague has ever existed without the communication of the African taint. As the authority of the learned Dutchman, though living in the seventeenth cen-

tury, appears to me as valid as that of Bancroft, Mertens, Hennen, &c., who flourished in the nineteenth, and especially as Plague prevailed more in the earlier than it has done in the later age, I feel that perhaps a greater deference is due to Diemerbroeck, or at least that his observation and experience should be brought distinctly to bear upon the controversy.

In speaking of contagion, Diemerbroeck (p. 25.) says, "Est primo morbi soboles, postea causa: soboles quia non existit nisi post morbum primo inductum: nam qui primus peste correptus fuit, illam à contagio non contraxit, sed post semel factum morbum, exivit contagium, quod similem quoque morbum multis aliis communicare potuit."

Plague therefore originates, according to Diemerbroeck, in the air, the poison of which is so inexplicable by any resort to natural causes, that he distinctly refers it to the supernatural; and it would seem that the air so infected communicates Plague to some individual, who afterwards infects others independently of any agency of the atmosphere. It will be seen that this is not a liberal interpretation of his sentiments, and that he believes not one, but any number may be infected by the atmosphere, and that all who contract the Plague may subsequently impart it from the emanations proceeding from their bodies. This doctrine I have no inclination to dispute; but it admits of two interpretations, viz. either that the disease is communicated by a matter *sui generis*, or by a local taint of air, wholly distinct from the idea of any such specific matter of contagion.

The communication of contagion (p. 57.) takes

place immediately by contact of the body or its excretions, or mediately through the air or a fomes; and it will be seen that he inclines to the more frequent communication by indirect than direct means, in opposition to the opinion of later authorities; for in examining at p. 60. the subject of contagion among the ancients, "which, though not unknown to them, is not much insisted upon," he says, "Verum dicas, quare igitur plerique veterum medicorum contagii descriptionem silentio præterierunt, vel adeo obscure de contagio locuti sunt? Respondeo, vel quia illos deterruit rei gravitas, cum ejus descriptionem difficillimam fore viderent; vel quia illud tanquam rem clarissimam tacite præsupposuerunt: vel quia non cognoverunt aliud contagium quam quod fit per immediatum contactum. *Cum autem contagium in Peste frequentius per medium quam per immediatum contactum communicetur, propterea de eo tanquam rariore vix loqui dignati sunt. Istius enim contagii, quod fit per vapores, aerem, fomitem vix usquam meminerunt, propterea quod causam morbi ita inducti, non corpori ægroto medium illud inficienti, sed ipsi medio infecto adscriberent: ex. gr. æger peste infestus sudorum, exhalationum et excrementorum foetidissimorum malignitate inficit aerem, qui aer ita infectus postea ab alio, aptam dispositionem habente, inspiratus, eidem illam, quæ ab ægroto corpore exierat, infectionem communicando, eundem morbum infert. Talem morbum veteres non à contagio corporis primo ægrotantis, sed à maligna aeris infectione proficisci dicebant, neque id contagium appellandum esse judicabant."*

It is a question whether these excrementitious exhalations from the sick operate as vehicles of a contagious matter *sui generis*, or as putrescent particles otherwise disseminated in the air : and the fact that Yellow fever in crowded hospitals, as at Philadelphia and New York, removed from the viated haunts of the fever, is not propagated, notwithstanding the actual contact of the well with the sick, militates with respect to it against the idea of the existence of a specific contagion. It may be said, that arguing from the results of one disease proves nothing with respect to another ; but where there actually appears an analogy, so far as cause derived from a peculiar state of the atmosphere is concerned, it may be allowable to reason of both in the same way on a subject so interesting and obscure as contagion.

Diemerbroeck says, that in the Plague of Nimiguen, though the contagion generally operated quickly, it sometimes was dormant for two or three weeks, and once (p. 65.) for several months. He doubts whether contagion from a fomes can excite an *epidemic* Plague. But “ cum contagium adeo vehemens est ut non tantum proximos homines sed ipsum etiam aerem inficiat, qui deinde omnibus promiscue communicatus, sævam pestem inducere potest : quæ tamen pestis, licet in una vel duabus civitatibus vagari queat, pluribus tamen regionibus communis fieri nequit, nisi aliquid Divini, *de novo* cœlitus immissi aut in aere generati, concurrat.” (p. 68.)

And he adds, (p. 69.) “ Docuimus pestem esse morbum communissimum ejusque causam elemento

communissimo, nempe aeri imprimis inhærere. Hanc quoque causam pesti adscripserunt Hippocrates, Galenus, Avicenna, nec quemquam fere invenias, qui non putaverit primitivam pestis causam *in aere* gigni, ejusque nocentissima seminaria *in aere* maxime divagari."

These opinions of Diemerbroeck are manifestly at variance with those who contend that Plague is solely communicable by contact ; and I insist upon them only as proofs that in the seventeenth century, when medical men were far more familiar with Plague than they have been for the last 150 years, it was felt that personal contact was inadequate to explain the extension of the disease, and that a cause, as diffuse as that which is supposed to produce Marsh fever, must be resorted to to account for many cases in which no connexion with the sick or with fomites could be reasonably established.

But if the atmosphere be capable of exciting Plague, why is it innocuous to some who are apparently as much exposed to its deleterious qualities as others who sicken under its influence ? It is well known, that in epidemics of Yellow fever there are often defined limits which it does not pass, and that this local range suggests the idea of as local a contamination of atmosphere upon which the disease depends ; as in the examples of the fever at Philadelphia in 1803, in that of Wilmington and of New London 1798*. Diemerbroeck seems to show that the same local taint of air is observable in Plague ; for in stating reasons why it does not affect all indiscriminately, he says, (p. 69.) "Primo,

* See vol. i. pp. 497, 508, 265, 570.

aërem per omnes suas partes æquali malignitatis gradu infectum non esse. Secundo, infectionem omni tempore et ubique locorum æque magnum non esse, sed suos gradus habere, nonnullis etiam in locis et temporibus minimam, in aliis majorem, in aliis maximam existere, et prout homines hunc illumve aerem hoc illove loco et tempore ingrediuntur ac inspirant, ut illos pro ista diversitate vel vehementius vel lævius vel plane non infici : ” and he adds, that some occult and inexplicable disposition is necessary, by which some are affected at once, others with difficulty, and others not at all.

It will be recollected also, that in Marsh fever, one of the most remarkable circumstances connected with it is its desultory, and apparently capricious, visitations, so that some places are exempted from its destructive ravages even in the line of its progress or prevalence, when no satisfactory reason, beyond that of the probable absence of the remote cause, can be offered to explain the anomaly. I have mentioned such a fact from Dr. Vaughan (vol. i. p.413.); and the fever which was limited to Brooklyn, opposite New York, in 1809, when that city was free from it, even though several who had been at Brooklyn sickened and died in New York of Yellow fever, may be quoted as another example. (vol. i. p. 533.)

The exemption of Boulac, Cairo and Gizeh, in Egypt, from Plague in 1798, as mentioned by Assalini, when Alexandria, Damietta and Rosetta were suffering from it, and the singular exemption of Larnica on the island of Cyprus in 1759, as recorded by Russell, even when persons ill of Plague were in the town, and mixing promiscuously with the inha-

bitants, may be quoted as similar examples of the local prevalence of this last disease.

Diemerbroeck evidently alludes to this limited range of Plague, where, in alluding to the pestilential infection not being equal and omnipresent at all times and places, he says, (p. 70.) "*Sed ut plurimum modo hæc, modo illa loca, nunc vehementius; nunc lævius invadere, et rursus alia multa intacta relinquere. Hanc de pestis varietate secundum loca opinionem confirmant omnes medici, nam, hoc fundamento innixi, jubent ad præservationem infecta loca cito et longe fugere. Sed quo? ad aerem salubriorem; ergo præsupponunt aerem in uno loco pestilenti labe infectum esse, aliis multis illæsis.*"

I have already alluded to the opinions of Diemerbroeck, as to the connexion existing between pestilential fevers and Plague. He discusses at some length the question whether fever be an essential part of Plague, and expresses his own conviction that it is not. One of the arguments which he advances in opposition to his own conclusion is, that Galen, Avicenna, Rases, Aetius, Paulus Egineta; and all medical men; ancient as well as modern, have given the history of Plague in their Treatises on Fevers, as if they considered it associated with them; and to this he replies, (p. 76.) that they have done so because "*morbis hic ut plurimum febrem sibi comitem, vel à principio vel paulo post adsciscit, non tamen individuum, sed ab eo separabilem, nam est sui cuique particularis ratio; Pestis enim oritur ex maligno veneno, Febris ex putredine et calore.*" And at p. 73. he contends that putrefaction is one of those causes which only secondarily

predisposes the body to Plague, by corrupting the humours, and thus rendering it less capable of resisting the pestilential poison to which Plague is owing; and hence it follows, that during a pestilential constitution Plague associates itself with all diseases to which that constitution gives rise. He explains the occurrence of fever in Plague, by resorting to the *vis medicatrix* of Cullen, for he supposes that nature opposes the poison on which Plague depends. If death be the prompt result of its action, or if the poison be expelled before there is any putrefaction of the humours induced, then Plague is without fever. But if the conflict endures long, then the humours get corrupted, and a malignant pestilential fever arises; so that the corruption and the fever are to be considered merely as symptoms subsequent to the action of the specific poison of Plague. He admits that Plague often begins with fever, that is, that fever often precedes the bubo and carbuncle; but then, as these pathognomonic symptoms follow, the fever is referable to the poison of Plague, and not to ordinary causes.

But at p. 79. he distinctly asserts that pestilential fevers and Plague have a common origin, differing only in degree. He is inquiring, “an Febris pestilens dari possit sine peste, et quomodo differat à peste et à febre maligna? Respondemus, posse dari idque duobus modis. 1. Cum pestilens inquinamentum, coelitus immissum, aerem incipit alterare &c., qui aer cum incipit naturæ damnosus esse (nondum satis venenatus existens ut pestem producat) putredines malignas in corporibus gignit, e quibus procedunt febres illæ pestilentes, quæ pos-

tilentem constitutionem præcedunt; et pestilentes vocantur, quia valde perniciosæ sunt idemque cum peste habent principium (solo malignitatis et venenositatis gradu diversum) à quo mediante putredine oriuntur. 2. Cum à pravis exhalationibus &c. pessima humorum putredo inducitur quæ perniciosa et pestilens evadit. Tales sunt illæ febres quas Galenus pestilentes sine peste vocat. Quercetanus et Riverius dicunt hujusmodi febres non semel visas cum veræ pestis indiciis (puta anthracibus et exanthematibus) et tamen à vera peste longe diversas fuisse quia non erant contagiosæ."

These pestilential fevers, attended by carbuncles and exanthemata, we may suppose to have been local, such as must have occurred in London frequently in the seventeenth century; and the mere circumstance of their limited extent, which implies that they were not contagious, deprives them of the appellation of Plague, though they had its characteristic symptoms.

As to the type of fever attending the Plague, he says (p. 80.) that although "Mercurialis, Andreas Gallus, Hercules Saxonia et Riverius febres pestilentes *intermittentes* Pestis comites dari, easque se vidisse, asserant, nos tamen hactenus nullas potuisse animadvertere intermittentes, sed observasse omnes fuisse *continuas*, earumque multas subinde quidem, sed absque ullo certo ordine remisisse, nunquam vero intermisisse:" and he admits (p. 81.) that the humours "longe citiorem et graviorem putredinem atque inflammationem concipiunt, imprimis æstate et autumno, atque in locis quæ pravis et putridis exhalationibus obnoxia sunt."

These extracts, I think, clearly show, putting aside the speculative views of the author on the subject of the causes of the pestilential fevers antecedent to or accompanying the Plague, that he referred them to the same common cause with Plague, and that they were modifications only in degree. The fact, also, that the authorities quoted by Diemberbroeck had observed Plague with fever of an intermittent type, affords an additional proof of its being a Marsh fever; and though from his own observations he could quote no parallel example, the difference of type, as it was presented to him, is to be explained, perhaps satisfactorily, by a reference to the latitude and temperature of the countries of the respective observers. Diemberbroeck admits that some of his cases were of an irregular remittent character; a fact, in my mind, as interesting and important as that of most of them being of the continued type.

I shall now refer to some of his observations on the Plague of Nimiguen in 1636, prefacing them, however, with his memorable admission of the indigenous origin of Plague at Heusden in 1663. The passage where the brief notice of it occurs follows as a query to the Plague of Amsterdam in that year, and cannot well be introduced without the citation of the previous introductory matter.

In speaking of the epidemic at Amsterdam, (p. 29.) which he says had been brought from Algiers and Smyrna, and which began to spread in the autumn, he adds,

“*Illud contagium per solum fomitem eo non fuisse transportatum, sed imprimis per ipsos peste*

infectos et ægrotantes ex Barbaria et Græcia (quibus in locis pestis acerrime grassabatur) huc delatos, qui suo contagio nautos et peregrinos in navibus infecerunt, cumque tandem omnes Amsterdamum venirent, atque in diversis urbis partibus hospitium sumerunt, plurimis in locis suo contagio infecerunt cives suos hospites, sicque propagatum est malum per totam urbem, et sequente æstate per infectos ad vicinas urbes inde commeantes, pluribusque oppidis et pagis fuit communicatum : idque per contagium quidem, sed cujus tamen primum seminarium Dei nutu aeri fuit impressum, in poenam scelestissimorum prædatorum Algeriensium, cujus etiam aliqua pars ad nostrorum peccatorum punitiōnem nobis per contagium fuit transmissa, et mediante putrido fœtore Amsterodamo non modo per æstivalem æstus familiari verum etiam *propter dilatata eo tempore urbis pomæria, huicque magnam stagnorum et cloacarum commotionem*, multum ad-aucto, plurimis communicata. *Sed quis scit an non quoque nostro aeri antea aliquid pestilentis seminarii fuerit immissum ? Nam diu ante adventum istarum navium contagium advehentium, pestis crudeliter grassabatur Heusdæ, multisque in pagis quæ tamen ab ipso forinsecus allato contagio, processisse non potuit.*" (p. 29.)

It is sufficiently evident from this passage that if Diemerbroeck referred the Plague of Amsterdam to imported contagion, he knew of no other cause for that at Heusden than the peculiar state of air to which he attributes the primary origin of the disease ; and this last epidemic, therefore, may be quoted as one of local origin : and if its contagion had not

spread to Amsterdam and other places, we may, perhaps, reasonably question the agency of the contagion supposed to be brought from Barbary and Smyrna. Heusden is a town on the borders of Brabant and Holland, situated in the midst of marshes, and surrounded nearly by a branch of the river Meuse. If its local impurities could excite Plague, why might not the circumstances at Amsterdam, distinctly mentioned in the above passage by Diemerbroeck, equally produce the disease? That ships arriving from a country in which Plague was raging should be supposed to have been the cause of the disease that followed, or that more probably was contemporaneous with such arrival, is natural; but in the present age we have abundance of facts to show that the inference of the arrival of such ships does not stand with relation to the sickness that follows, or that becomes aggravated, as cause to an effect. I would quote the instance of the epidemic at Norfolk, where ships from the West Indies were at first considered to have been the vehicles of the Yellow fever which prevailed, till inquiry showed that the disease had existed previous to their entering the port. (vol. i. p. 373.) That the cause of Plague existed at Amsterdam may certainly be inferred, as it broke out at Heusden, at no great distance, before the ships arrived, and under circumstances which afforded no ground for Diemerbroeck's attributing it to foreign contagion. The facts as they appear are simply these: Plague was in Barbary and Smyrna earlier than Holland; it first appeared at Heusden, afterwards at Amsterdam, and in the following summer in other cities and places. Because there

was clear proof of intercourse between Smyrna, Barbary and Amsterdam, the inference was, that the Dutch had contracted the germ of disease from that intercourse ; but it was found that Plague appeared at Heusden long before this intercourse was established. This was attributed to the local atmosphere ; but the Amsterdam disease was explained by imported contagion : and yet if the atmosphere could excite it in one place it might in another, under those circumstances with respect to local impurities which Diemberbroeck states existed at Amsterdam. Had we particulars of the respective epidemics, we should probably find that in Smyrna and Barbary the disease obeyed the law of latitude both with respect to temperature and type, and that while in the one latitude it was naturally early and of an intermittent or remittent form, in the other it was late, and probably of the obscure remittent or continued character. It is well known at the present day, that any one given epidemic stands related as part of a general effect from some common inscrutable cause. We see this in the contemporaneous observations of Rush, as to the aggravation of fever in Philadelphia in the years 1793 and 1798, and of Gallup in Vermont. Yet in the one country the aggravated effect was Yellow fever, and in the other Typhus. The same general law holds good as to the year 1817, which was formidable in Great Britain from the general existence of Typhus ; and Hennen (p. 381, Medical Topography,) quotes Mr. Goodison's report of a malignant Remittent fever in Santa Maura in 1817, who says, " It would appear that there exists something in the nature of the

soil sufficient to produce the disease, added to a particular constitution of the air, *which rendered the summer of 1817 so sickly throughout the whole of the Mediterranean.*" Italy also was invaded by a petechial fever this year, distinctly of a periodical type.

The Plague in Smyrna and Algiers in 1663, aluded to by Diemerbroeck, may be considered to stand remotely connected with that of London in 1665. Yet we find it sprung up spontaneously in Holland in 1663. In London the same year there died nine of the Plague; why did not the contagion go forth from these cases and produce an epidemic, if contagion from the Smyrna ship was the cause of that at Amsterdam? Well may Diemerbroeck say, that contagion from a fomes cannot produce an epidemic Plague, since nine cases of the disease, *with their fomites*, in London, produced no such effect. The Plague of 1665 in London was owing to contagion from Holland! But in 1664 six cases of Plague were fatal in the City! Why was the contagion which began in December 1664, not the product of these cases? Why should Smyrna contagion be more powerful than that of Heusden; or Dutch contagion, than that of London? The Amsterdam epidemic is referred to foreign contagion, though Plague was at Heusden before such foreign contagion arrived; and the London epidemic must come by bags of wool from Holland, though the disease had been in the City almost every year since 1603, and probably since its foundation.

I have already quoted a notice of Plague, &c., at Ulm. Gockelius says, "In 1665, some soldiers re-

turning from Hungary, having been in the Turkish wars, spread the infection about Ulm and Augsburg, where he then lived ; and *besides the Plague*, brought along with them *the Hungarian and other malignant fevers*, which diffused themselves round the neighbourhood *."

Here Plague is asserted to have been brought to Ulm and Augsburg by soldiers who had been in the Turkish wars, but it came in company with the Hungarian and other malignant fevers. The Hungarian fever was considered by Pringle to be a compound of Marsh fever and Typhus, the contagion of the last cooperating to produce a mixed disease. It may not unfitly be compared in general character to the Lake fever of America, beginning often with the precipitancy of the worst forms of Marsh Remittent, and having the continued and protracted character of Typhus at the close. There are few who have studied the character of fever in different countries who will believe that such fevers are capable of being produced but by local causes ; and their coincidence with the Plague at Ulm might be made use of to show that it was probable neither they nor the Plague were propagated by contagion from the soldiers, but that their arrival, like the ships at Amsterdam in 1663, was a mere coincidence with the epidemic ; for we have seen at Larnica one well-authenticated case of Plague being incapable of propagation ; and the fate of Heusden is admitted, by a staunch contagionist, as an exam-

* A Practical Treatise of Plague ; by Joseph Browne, M.D. London 1720. p. 52.

ple of the disease springing up where there was no contagion to account for it.

In the case of Larnica, the anomaly is attempted to be explained by the want of a fit atmosphere to admit of the contagion taking effect, it being argued, that the gerin of the disease, requiring an appropriate medium for its growth, dies like the seed without a soil adapted to its wants. But on this conjectural view it is difficult to say how much of the extension of Plague is due to the one requisite or the other. There was disease enough, on the admission of Russell, at Larnica, for the existence of contagion, but the inhabitants escaped. Had the air been in a fit state, they would have taken the Plague; but as we know that the air can in peculiar localities generate a disease almost as fatal as Plague, and sometimes characterized by the same general symptoms, it is fair to infer, that taking the epidemic of Heusden into consideration, had the air of Larnica been adapted to the generation of disease, it would have operated in the one case as in the other, without the necessary cooperation of contagion, for this failed to act of itself, while the air at Heusden produced what contagion could not at Larnica.

The Plague of Nimiguen was part of a general epidemic which in 1685, 1636 and 1637 overran Belgium and a great part of Germany. It was preceded by general sickness. The warm and moist spring of 1635 was followed by a very hot, dry summer, during which severe epidemics prevailed in several places. While the Plague destroyed 20,000 persons at Leyden, a *pestilential fever*, attended with

great mortality, raged at Nimiguen and through all Guelderland.

He says (p. 8.), "Ver anni 1635 tepidum et modice humidum fuit : post hoc secuta est æstas vehementer calida et sicca : qua tempestate maximæ putredines, multique graves morbi epidemii plurimis in locis excitati fuerunt. Imprimis autem gravissima pestis Lugduno Batavorum uno anno ultra viginti millia funerum extorsit. In nos autem et Gueldriam, aliasque plures regiones *Febris quædam pestilens epidemia diris furiis debacchata fuit, magnamque hominum stragem edidit. Circa autumnum, adhuc permanente imo magis adaucto aeris fervore, summis siccitatibus conjuncto, undique adhuc majora putredinis indicia, et undique plures maligni morbi apparuerunt, diarrhææ et dysenteria pessimi moris passim grassabantur, sed omnium maximæ prædicta Febris pestilens, quæ indies majora incrementa sumens magis magisque in pejus mutabatur, et purpurata (quam Petechialem vocant Itali) evadebat, donec tandem in apertissimam Pestem transiret.* Quæ Noviomagi, mense Novembri anno dicto, initium sumens, paulatim ista hyeme spargebatur. Hyems autem nullo magno frigore excelebat, in siccitate et humiditate mediocris erat. Mense Januario 1636 omnia pejora reddi cœperunt : at circa Martium Pestis longe majora incrementa sumpsit : summo autem acumine exarsit circa finem mensis Aprilis, atque in isto furore usque ad finem mensis Octobris continuavit, quo temporis intervallo tam crudeliter grassatus fuit morbus, ut in tota urbe nulla fere quod scio, domus à peste immunis fuerit. Postea lues hæc paulatim cœpit declinare, ita ut tandem

mense Decembri multo pauciores ægri, et rariores mortes viderentur. Hyems illa præter consuetudinem valde tepida fuit, huicque pestis diutius perduravit. Anno sequenti 1637, circa medium Februarii, magno frigore præter expectationem repente oborto, per sex septemve dies fortiter gelavit: quod acerrimum, licet breve, frigus horrendæ hujus luis vires adeo infregit ut in principio mensis Martii ejus reliquæ apud Noviomagenses penitus eradicae fuerint quo tempore ultimos hoc contagio infectos invisimus. Dico, apud Noviomagenses, nam multis aliis in locis etiam, toto illo anno 1637 maximam tyrannidem exercuit, et præter alia loca, in diœcesi Ultrajectensi, charam mihi patriam Montfurtum oppidum, totumque territorium Montfurtense, adeo miserè afflixit, ut vix dimidia incolarum pars superstes remanserit. Quemadmodum annus 1635, æstate et autumno maximis aeris fervoribus excelebat, ita sequens annus 1636, non minori fervoris vehementia, à vere usque ad hyemem perdurante, antecedentem annum excepit. Venti à vere usque ad hyemem fere semper meridionales, vel zephyri erant, cum magnis aeris squalloribus. Ad hæc, a mense Martio usque ad finem Augusti continuæ erant siccitates, quales vix unquam antea tam diuturnæ visæ fuerant: quæ omnia anni præcedentis mala plurimum adauxerunt."

Among the precursory signs of the Plague, Diemerbroeck (p. 14.) enumerates, in the summers of 1635 and 1636, the following: "Venti austrini diuturniores, sæpe etiam nulli venti manifesti. Maximi æstatis fervores, et siccitates diuturnæ, quæ hyemem tepidam, humidamque sequebantur, et rursus

ab hyeme tepida excipiebantur. Avium multo rarior numerus. Maxima et incredibilis insectorum copia, qualis vix unquam visa fuit. Morbi epidemii mali moris, dysenteriae valde malignae et contagiosae imprimis febres putridae malignissimae, et purpuratae, plurimisque lethales."

At p. 258. he adds, that in 1635, "aestas erat calidissima et siccissima. Circiter Junio Febris quaedam maligna et pestilens Noviomagi (Nimeguen) passim grassari coepit, quae postea adaucta maximam stragem edidit. Hujus febris curatio in principio propter mali novitatem difficilior visa fuit, sed non diu post compertum est venæsectiones ter quaterve et interdum plures reiteratas ad curationem primum subsidium attulisse. Circa finem Septembris febris hæc valde imminuta est, ita ut multo pauciores ægrotarent, sed in multis eorum quos tunc morbus tenebat, maculae exiguae rubrae et purpureae in corporibus apparuerunt. Circa medium Octobris varii absque his maculis febris cum summa anxietate correpta subito intra biduum vel triduum interierunt, et venæsectiones antea valde utiles, tunc inutiles, imo noxias evasisse compertum est. In principio Novembris certissima Pestis signa in ægrotis apparere coeperunt, atque exinde dira labes paulatim per urbem dispersa fuit."

From this account it appears, that in the summer of 1635, which was unusually dry and hot, a malignant fever arose in June, which was treated successfully by bleeding; that towards the end of September cases occurred with petechiae; that in the middle of October several persons died on the third or fourth day of a fever, "*summa anxietate correpta*,"

in which bleeding was found to be inadmissible; and that in the beginning of November symptoms of Plague appeared, which from that time became the reigning disease.

Diemberbroeck has afforded us no opportunity of judging of the character of these precursory fevers; but they seem to have passed from an inflammatory to a typhoid state, and to have been lost in the Plague.

He admits that there is no pathognomonic symptom in Plague, (p. 17.) "*quo posito, Pestis necessario ponatur, sublato auferatur.*"

As this is a general admission, it may seem unnecessary to dwell upon the fact. But it appears to me a most important circumstance, and well deserving attentive consideration; for if Plague be a disease *sui generis*, owing its existence, as Bancroft contends, to an original germ, of as divine an origin as the germs of the vegetable kingdom, and that all Plagues have proceeded from it, we might naturally expect that it would have a determinate character in all those cases at least in which life was sufficiently long protracted for the exhibition of its symptoms. But on the other hand, if Plague be a mere modification of Marsh fever, then, from the mutability of this Protean disease, we should expect to find that, like Yellow fever, it was impossible to affix precise and definite limits to it. This is allowed by Bancroft himself, and Diemberbroeck says, immediately after the passage last quoted, "*Quamvis enim pestilens venenum suas habeat notas peculiare quibus se prodit, nempe bubones, carbunculos et exanthemata, quia tamen hæc non*

nunquam in aliis quoque morbis apparent, quia etiam in Peste semper non apparent, et morbus sæpe irruit in corpus variis humoribus ad putredinem paratis refertum, multa alia simul infert symptomata diversis aliis morbis communia, quæ magis propria Pestis signa obscurant, vel prodire impediunt, cognitionemque interturbant, utpote quorum multa non immediate à malignitate sed à putredine oriuntur. Quapropter non febris, non somnolentia, non capitis dolor per se pestem designant; sed si his accedat magna virium prostratio, *et pestilens sit cæli status, ac morbus epidemicus perniciosus grassetur*, hand exigua de peste conjectura fieri poterit, imprimis si aliquod ex peculiaribus signis, nempe bubo, anthrax vel exanthemata, accesserit."

It is admitted in this passage that even the peculiar symptoms of the pestilential poison occur in other diseases, and are not always present in Plague, and that a pestilential state of the atmosphere and a pernicious epidemic disease are essential to its existence.

He admits that it prevails more extensively in Holland in the summer and autumn than in the middle of winter; "licet" (p. 70.) "interdum etiam contrarium evenire visum est, quia anni tempestates non semper debito ac consueto modo se habent (ut cum æstas subfrigida, hyems tepida fuerit,) atque huic pro earundem varia mutatione, sæpe etiam furor pestilens variat."

In the commencement of the epidemic, many took the disease by contagion; "postea" (p. 9.) "vero adeo immanis evasit dira lues et aeris tam horrenda labes, ut nullus fere in tota civitate locus non in-

fectus inveniretur. Tunc æque fere inficiebantur qui contagiosa et infecta loca fugiebant, atque alii qui indiscriminatim quoslibet ægros et sanos adibant." And he adds, (p. 11.) "Ratio fuit quia aer Noviomagi ubique æquali fere modo infectus erat, nec multo magis in ædibus ægrotantium quam extra easdem, et tantum erat ubique locorum aeris contagium, ut qui aptam ad pestem dispositionem habebant, nusquam fere tuti essent, sed quocunque loco peste corriperentur:" and he quotes Hildanus, who says that in the Plague of Lausanne in 1613, "rusticos et illos qui in altissimis montibus ab omni hominum consortio separati vivebant, non minus peste infestatos fuisse, quam illos qui in civitate habitabant; qui licet etiam maxima diligentia à se invicem separarentur, nihilominus tamen infirmos, qui cum ægris nullum consortium habuerant, trucidatos esse."

What, therefore, Diemerbroeck had asserted in his speculations as to the agency of the atmosphere in Plague, was so far verified under his own observation at Nimiguen, namely, that air could communicate the disease.

The assertion of Hildanus is very remarkable. Was the Plague a primitive disease of the mountains, or did the inhabitants contract the germ of it in the plains? It is well known that some forms of Marsh fever may be imbibed in one place and one season, and developed in a distant place at another season. Diemerbroeck states a fact which is very curious, and probably explicable on the supposition of the cause of Plague, like that of Ague, lying dormant for some time in the system.

"Non raro," he says, (p. 9.) "quasi sympathiâ quadam occultâ, integræ familiæ eodem tempore inficiebantur, imo vidimus nonnullas familias longissime à se, invicem dissitas et diversis in locis ac urbibus habitantes eodem, fere tempore exitialissimis hujus tyranni, apiculis graviter afflictas et fere delatas fuisse."

The fatal days also show a close analogy with Marsh fever. "Plurimi" (p. 13.) "ante septimum diem interibant, multi subito primo die exstinguuntur, multi quoque tertiâ vel quartâ, plures autem quintâ vel sextâ. . . Qui diem septimum et nonum supervivebant, de iis aliqua spes erat. . . Aliquos tamen vidimus qui ad tertiam et paucos qui ad quartam septimanam morbum protraxerant, et tandem mortui sunt."

These chronic cases were all examples of fever, for he immediately after says, in allusion to them, "Febres enim pestilenciales lentæ valde fallaces erant."

The apparent exciting causes, also, show a remarkable similarity with what Rush observed in Philadelphia in 1793, (vol. i. p. 439). Anything which strongly affected the health or disturbed the mind apparently contributed to the *immediate development of Plague*, as if an epidemic atmosphere had at Nimiguen acted on the inhabitants as it did in Philadelphia, and the slightest disorder in the one case terminated in Plague, as it did in the other in Yellow fever. I shall quote some examples of this, as the subject is one of great importance.

Celsus says, "Quoties offensus corpus est, vitiosa pars maxime sentit." And in an epidemic state of

atmosphere it may be reasonably imagined that the parts on which the specific poison operates are prone to disorder, and that any shock may induce it.

Diemerbroeck (p. 12.) says that many women suffered abortion "ac simul etiam peste corripiebantur, à qua paucissimæ evadebant. Quæ vero ad justum partus tempus perveniebant et feliciter pariebant; etiam has dira læs, cum suo foetu, citissimè occidebat." And (p. 13.) he adds, "Si quispiam alio quodam morbo corripereetur inter viginti quatuor horas pestis illi morbo adjuugebatur; ita ut toto anno vix ullus morbus peste incommitatus visus fuerit:" and he quotes Mindererus and Sennertus in proof of the same fact occurring in the Plagues of 1616 and 1626.

Debility, induced by various causes, appeared to excite the disease. "Viri veneri minus assueti, si eandem nimis strenne exercerent brevi post peste corripiebantur. Hinc factum quod plurimis sponsis secunda tertiave post tedam nuptialem diè, funebris teda accensa fuerit." (p. 12.)

Again (p. 149.), "Durante hac peste sæpius observavimus, statim post graves exercitationes et magnas defatigationes multos peste correptos fuisse: cujus rei eventus tandem adeo innotuit omnibus, ut multi etiam vulgares à gravioribus laboribus abstinere: quin et rustici, tempore messis foeni, suum foenum metere et colligere nollent, edocsi tristibus aliorum exemplis, qui graviter laborantes statim post peste correpti fuerant."

At p. 272. he mentions the cases of two soldiers who were bled, as a preservative against Plague, and who sickened immediately after, one dying on the third, and the other on the fifth day.

His 23rd case (p. 277.) is that of a robust, healthy girl, who in May, as was her annual custom, had six or eight ounces of blood drawn, by cupping, from the foot. She was seized with horror, somnolency, great anxiety about the heart, and severe vomiting. He found her feverish, with a small unequal pulse. She sweated after a sudorific draught, and complained of a pain in the groin. After the sweat, the horror returned, and the next day a hard tumour was perceptible in the groin. On the third day the fever "*cum magna vehementia recrudit (quæ tamen secunda die non omnino intermiserat sed multo remissior fuerat) cum capitis dolore, maxima situ et enormi vomitu; evanuit etiam inguinis tumor.*" She sweated moderately at night, and the fever was somewhat abated; "*tamen postridie iterum recrudit, et magno cum furore usque ad vespertinam continuavit.*" She died on the sixth day from an immoderate flow of the menses.

Diemerbroeck, in his remarks on this case, says, "*Quocunque tempore sanguis extraheretur etiam in plethoricis et maxime sanis, fere semper tamen pestis hanc evacuationem insequabatur.*"

Mental emotions also were followed by sickness and Plague. At p. 149. he says, "*Nullus est animi motus qui pestilentis dominii limites longius et citius extendit quam terror;*" and he gives several examples of its immediate effects.

His 43rd case is that of a man who was told of his parents having died of Plague, "*prope Tielam habitantes, à quo tristi nuncio tantopere conturbatus est, ut etiam ipse inde statim pestem conceperit, à quâ ante quartum diem obiit. . . . Si ex solo nuncio*

hic ager peste correptus fuerit, quis mirabitur ex solo aspectu infectarum ædium nonnullos peste infectos fuisse; ab aspectu currûs in quo mortui ad sepulturam vehuntur; nonnullos contagium concepisse, imo nonnullos ex insomniis de peste diralabe contaminatos fuisse."

In these cases there is no mention of any source of contagion; and there is no reason to suppose that Diemerbroeck considered that the disease was communicated otherwise than by the atmosphere; and that the disturbing causes were, in his estimation, the immediate occasions of disorder, upon which Plague supervened. It might be argued, that cases of this kind, arising independent of, and remote from, all connexion with the sick, will serve to explain the sudden seizures which sometimes follow the intercourse with them. Thus, he attributes imminent danger to the proximity of the dying; and in his 45th case (p. 299.) mentions a fact in proof of it. An ironmonger died of Plague in May, on the fourth day. "*Duo filii cum ancilla ante lectum adstabant, qui simul ac æger extremum spiritum efflaret, eodem momento contagio infecti sunt. Ancilla cum filio juniore statim animo linquebatur, deinde magna feбри simul omnes obruti fuerunt. Filii intra biduum vel triduum occubuerunt.*" The maid, who had had a previous attack, (Case 9.) on the 7th of April, with a bubo in the left axilla, was now affected with one in the right axilla and in the groin, but she recovered. Diemerbroeck adds, that daily experience shows "*adhuc fortiter spirantibus ægris multo minus contagii periculum adesse, quam iisdem morientibus, eaque de causa multi non sine ratione putant,*

se tutius invisere posse decem languentes quam unico morienti vel statim mortuo, adesse."

He explains himself more fully in another passage, which is too curious to be passed over. In speaking of a fomes. (p. 67.), he says that the miasm in it is the same as that which emanates from the human body; and the reason why one fomes by its emanations does not form others in all directions, is, that its miasm is so subtle as to be dispersed in the air, whence intercourse with the sick is so much more dangerous than with a fomes. "At si illa miasmata immixta fuerint tenaci alieni vaporis, atque ita ad commodum inane corpus delata, illi firmiter adhærebunt et fomitem constituent. Hinc est quod pestiferorum novissimi halitus (quibus illa miasmata immixta sunt) e moribundis exeuntes, plerumque fomitem constituent, quia moribundorum calor jam pene extinctus, et omni vigore privatus, putridas fuligines amplius attenuare et discutere nequit, ac propterea crassas tantum et tenacissimas exhalationes vaporosas emittit, quæ cuiuscumque disposito corpore obviæ facile inhærent, eique se insinuant. Hic est ille halitus verus. (à multis pro fabula habitus) de quo vulgares loquuntur, cum dicunt se vidisse ab ægro, extremum spiritum reddente, exiisse venenum pestilens *instar parvæ nubeculæ ceruleæ* (nam illi ultimi halitus talem colorem aliquo modo rudioribus referre videntur, si candela ardens paulo longius à lecto adstet) idque se insinuasse in hanc aut illam rem. In eo quidem errant illi rudiores, quod totum venenum pestilens una cum extremo spiritu e corpore exire arbitrentur, cum tantum aliqua veneni pars vaporibus istis

permixta exeat; attamen docet experientia ex rebus illis, in quas talem nebulam transferri viderunt, postea casu commotis vel excussis, pestem non semel aliis adstantibus mox communicatam fuisse."

This is sufficiently explicit as to the mode and the moment of the formation of a fomes." The difference as to the susceptibility of contracting the disease "adhuc fortiter spirantibus ægris," and from the moribund, whose heat "jam pene extinctus et omni vigore privatus, putridas fuligines amplius attenuare et discutere nequit," might, in a sceptical mind, raise a doubt of the contagiousness of Plague, especially if the common exciting occasions reported by Diemerbroeck are to be considered as equivalent, in an epidemic state of atmosphere, to the production of the disease in persons who have had no intercourse with the sick, and the hazard of attending the dying, instead of being referred to the agency of the *blue cloud*, which is seen to be emitted with the last breath, might be explained by the powerful impressions made upon the mind of the bystanders, on seeing the last agony of life; as similar impressions, made from various causes out of the sick room, are found to be as promptly followed by Plague.

This subject is one of great interest and importance, and bears very strongly on that of the existence or non-existence of contagion; and I would refer to the opinions of Rush respecting the influence of mental emotions, accidents, and other disturbing causes, in promoting Yellow fever in 1793. I have quoted (vol. i. p. 439.) an instance from him, where a fall appeared to have excited it in a boy;

and Diemerbroeck says, (Case 88.) that a soldier, who had his right thumb blown off by the bursting of his musket, was immediately seized with pestilential fever, attended with pain in the right axilla, and exanthemata, and he died the next day.

The fever which attended several of the more protracted cases at Nimiguen was evidently of the remittent form. The case (23rd) already quoted was of this kind. Case 97. is that of a man who was taken ill on the 1st of September. He was feverish next day, with pain in the groin and great anxiety. He sweated, after which "*mediocriter valeret, toto biduo nullum medicamentum assumere voluit;*" on the 5th, "*vehementissima febris rursus invasit.*" He sweated from a sudorific; found great relief; and again discontinued his medicine. On the 7th, "*summo mane febris iterum magna violentia recrudit.*" He took a sudorific, sweated copiously without relief, severe vomiting came on at noon, and his strength was much sunk. On the morning of the 8th, he was rather better, "*sed nihil immutata est febris: obscurus in inguine tumor perceptus est. Circa vesperam febris, anxietas, capitis dolor magis ingravata sunt. Postridie lingua tumida et nigricans visa est, circa meridiem exanthemata purpurea mortis instantis nuncium tulerunt.*"

This case lasted nine days; distinctly remitted until the seventh day, when the fever became continued; and death occurred on the ninth, with no other symptom of Plague than an obscure tumour in the groin, where pain was felt on the first day.

The apparent facility with which sweat was elicited in many of the cases, and the alternate aggra-

vation and alleviation of the febrile symptoms on the odd and even days, (Cases 54, 56 and 68,) are circumstances which show a striking analogy with the Marsh Remittent fever. The appearance of the eyes, which is peculiar both in Yellow fever and Typhus, was also another point of resemblance. Diemerbroeck describes them more like the eyes of Typhus than of Yellow fever; the difference, however, in the expression of these organs, in these diseases, not being constant and uniform, but depending on the degree of excitement; whence the look of a person under Yellow fever is usually so wild compared with the dull and glassy lustre of the eye of one labouring under Typhus. He says; (p. 82.) "*Oculi turbidi, et flentium ac mœrentium oculis similes apparent, simulque vivido colore ac splendore destituuntur;*" and in the same passage, descriptive of the symptoms of Plague, he says, besides fever, "*multa symptomata horrenda pestem comitantur. Sunt vel pesti magis propria; et cum aliis paucis morbis communia; ut bubo, anthrax, exanthemata; vel minus propria et cum pluribus aliis morbis communia, quorum primaria hæc sunt: capitis dolor, phrenitis, sopor, vigiliæ, anxietas, magna virium prostratio, visus turbulentus, cordis palpitatio, linguæ siccitas, vomitus, fluxus alvi, hæmorrhagia narium.*"

The fever in some cases was continued from the first. A lady (Case 27.) was taken ill of a "pestilential fever" on May 16th. She was reduced to a state of extreme debility on the 19th; and "*hactenus nulla externa pestis indicia apparuerunt et fe-*

bris, non admodum violenta, absque ulla intermissione continuavit." On the 24th, "nonus à principio morbi dies, crisis facta est per sudorem spontaneum, post quem totum corpus parvis pustulis rubicundis, magnitudine milii seminis, undique obsesum fuit, cum magno pruritu; in inguine etiam bubo protruberavit, et morbus critice solutus fuit." The bubo subsided in a few days. In his remarks on this case, he says; that the patient was worse on the seventh day, and that the gentle sweat he had kept her in was continued till the ninth, "ad quem usque diem febris eodem fere tenore sine ulla intermissione duravit, sine ullis etiam externis pestis indicis, quo morbus critice solutus est, ut dictum:" and he adds, that during pestilence any fever should be suspected, though it have no symptoms of Plague at first, for "celerrime inter paucas horas communi aeris vitio pestifera lues ei adjungebatur. Sicut etiam cum Montano testatur Forestus, tempore pestilenti infinitas videri febres continuas, tertianas vel similes, quæ statim convertuntur in pestilentes." This forced separation of pestilential fever from Plague, merely because febrile symptoms of this or that type have for several days neither bubo nor carbuncle associated with them, will scarcely be admitted as valid at the present day; and if the case reported above be considered as one of Plague from the first, the interest attached to it is, that its origin was referred to the atmosphere. On the supposition that the bubo was Plague, suddenly induced by the introduction of its specific poison, it is rather remarkable that its effect should have appeared

to have been rather salutary than the reverse, for the symptoms subsided from the moment the critical sweat and bubo appeared.

Case 68, is another example of critical sweat on the seventh day, and recovery.

Some of the cases were protracted to the third week, with various symptoms. Case 118. is that of a lady who was seized, on the 14th of December, with debility and syncope. "*Aderat parva febricula absque aliis symptomatibus pestisve indicis; pulsus creber, parvus, inæqualis. Morbus toto quadriduo in eodem statu permansit. Postea carbunculum in mediis lumbis percipimus.*" On the seventh day she was rather better, pulse stronger: on the eleventh she relapsed to her former state of debility, and the carbuncle had got to a large size. "*Omnibus non obstantibus eodem fere modo (nunc paulo melius, nunc pejus se haberet) continuavit morbus, usque ad diem vigessimum sextam, qua die 9 Januarii 1687 miserrimum finem imposuit.*"

Case 50. is that of a lady whose family had left Nimiguen three months before on account of the Plague. She was attacked on the 18th of June, and Diemerbroeck found her the next day slightly feverish, weak, with headache, anxiety, small, frequent, unequal pulse, heat not high, a small, hard, latent tumour in the left groin. On the 15th diarrhœa supervened, and the stools were "*cineraceæ, fœtidissimæ.*" Tumor plane disparuit, vires valde prostratæ. 16 Junii alvi fluxus in eodem statu permansit, lingua nigricans erat. 30 Junii, cum diarrhœa nondum plane cessaret, sudoriferum rursus

exhibitum est. Huic post valde copiosum sudorem sensit dolorem in inguine cum tumore qui postea increvit ad magnitudinem semi ovi gallinacei. Fluxus quoque alvi adeo imminutus fuit ut tantum bis terve de die dejiceret. 2 Julii excrementa alvi naturalem colorem et crassitiem receperunt, tumor aliquantum increvit. 3 Julii cessavit alvi fluxus et æger mediocriter valuit. 8 Julii bubo circiter adhuc per decem dies in eodem statu permansit; postea paulatim evanuit."

Some of the cases had the parotid gland only enlarged, as Case 21, in which death occurred on the fourth day, with purple exanthemata.

Case 13. is that of Lord Calberry, who came to Nimiguen on April 14th. "Simul ac urbem ingrederetur, insolitum quendam fœtorem percepit, à quo ipsi nausea facta fuit et caput doluit." The next morning he complained of nausea, and pain and tension in the parotid. He took some purgative pills, which removed the pain. In the evening he had again three or four stools, and during the night diarrhœa and fever supervened. On the 16th Diemerbroeck saw him and exhibited a sudorific, which operated with some relief, but the next day he felt pain in the parotid, the stools became sanguineous, and he died.

I have gone into this deliberate examination of Diemerbroeck's work to show,

1st, That he believed Plague was originally derived from the atmosphere; and that, though in his estimation it was a contagious disease, many cases occurred during the Plague of Nimiguen which were referable to an epidemic state of air, and not

to contagion: consequently there is no support to be derived from his opinions and observations in defence of the modern doctrine, that Plague is invariably and solely communicated by contact.

2nd, That Plague, as he has described it, has many close analogies with Marsh fever; not only having fever of a distinctly remittent type, but an appearance of the eye precisely like that which is observed in other forms of Marsh fever, attended with a low excitement, and a combination of symptoms which are frequently met with in them, as vomiting, diarrhœa, hæmorrhage from the nose and bowels, petechiæ and parotids; and that remarkable loss of balance in the circulation which, changing with great rapidity from excitement to collapse, and *vice versd*, constitutes the great difficulty and danger of the worst forms of Marsh fever.

3rd, That the bubo and carbuncle are not invariably present in Plague, and are admitted to occur in other diseases, which are not called Plague, from their local extent, and from the absence of any general mortality attending them.

4th, That the Plague of Nimiguen was preceded by seasons of unusual character, and by malignant fevers, which gradually passed into Plague; which fevers were evidently of the same nature with the Plague itself; and that, as no cause was assigned for them beyond the peculiar state of the atmosphere, and local contaminations of air, it is more reasonable to suppose that the Plague was the ultimate effect of the common causes which were operating so prejudicially to the health of the country, than the effect of an accidental contagion intro-

duced into the city, especially as the subsequent Plague at Heusden in 1663, was to all appearances an example of an indigenous epidemic.

CHAPTER V.

PLAGUE OF MARSEILLES.

THE Plague of Marseilles, lat. $43^{\circ} 17'$, in 1720, has, as usual, given rise to much controversy. I shall briefly state some facts connected with it, to show that the disease existed in the city before the arrival of the ship from Syria; that it sometimes appeared as an Intermittent or Double Tertian; was preceded by a year of unusual character, of great heat and scarcity; and that in certain provinces or places it did not spread through intercourse with the infected districts.

Russell (p. 217.) says, that M. Pons endeavoured to prove the Plague was in Marseilles even in 1719, but that he had not seen his book. The fact is stated in the Treatise on Plague*, on the authority of M. Deidier, a Professor of Medicine at Montpellier, who was sent to Marseilles by order of the Court, with Chicoyneau and Verny. If true, it would only imply that some cases of fever in 1719 had some of the symptoms of Plague, a circumstance which is not improbable, considering the cases which occurred in April and May 1720. The passage I refer to is the following:

* *Traité de la Peste.* Paris 1744. 4to.

“ Le vaisseau de Chataud est regardé comme la source de la Peste de Provence ; mais Deidier donne une autre origine à cette maladie. L'année 1719 fut sterile, les bleds, l'huile, les vins manquèrent, les chaleurs furent excessives, des pluies continuelles succederent aux chaleurs de l'été, les vents d'ouest soufflerent avec violence : ces dérangemens, selon M. Deidier, porterent dans les corps le levain qui a infecté la ville de Marseille. Les alimens, l'abondance des mauvais fruits le multiplierent, et le firent éclater ; *cette année même plusieurs personnes moururent de la Peste*, du moins les accidens qu'elles éprouverent étoient-ils les symptômes des fièvres pestilentiellees. *On observa dans le cours de ces fièvres des Bubons, des Charbons, des Parotides* ; des morts subites avoient déjà annoncé quelque changement singulier dans les corps ou dans les saisons : par une gradation insensible, des causes ordinaires préparoiént une maladie formidable.”

This statement of facts, the author of the Treatise says, is in opposition to the opinion of the other physicians of Marseilles ; that Deidier derived them from the public registers ; and that those who saw the cases did not recognise in them anything which indicated a Plague.

Russell says, “According to the historical account, the distemper discovered itself in the city about the 20th of June 1720, but instances were rare before the 1st of July. From the 12th to the 23rd of July there was a deceitful pause, during which the popular apprehensions began to subside. The physicians were accused of having mistaken ordinary fevers for Plague. The disease, however, spread in the Rue

de l'Escale (where it appeared the 1st of the month). A surgeon declared it to be a *worm* fever; but on the 23rd, though he adhered to his former opinion, a physician who accompanied him said it was Plague. From this time it spread in different places, and by the end of the month had got into the suburbs. Four physicians pronounced it to be Plague; but it having been hitherto confined chiefly to the lower class of people, the report was not credited. After the first week of August the distemper increased rapidly, and universal dismay soon succeeded." (p. 211.)

The facts contained in the above extracts are, that the year 1719 was unusual in its character, attended by scarcity, great heat, followed by long-continued rains; the occurrence of a disease which Deidier thought was similar to Plague, but which others did not consider that disease; the arrival of a ship from Syria on the 25th of May 1720; the discovery of Plague in the city of Marseilles on the 20th of June, twenty-six days after the arrival; and the slow increase of the malady through July, affecting particular places, and the lower class of people, till early in August, when it began to spread generally.

There is not any account of the disease in 1719, which Deidier supposed was analogous to Plague. The physicians who saw the cases "*n'avoient reconnus dans les malades rien qui annonçât la peste.*" All dated the first ravages of the disease to Captain Chataud's vessel, and "*le Journal tiré du Memorial de la ville marque cette époque.*"

This, at all events is an admission that a disease did exist in 1719, though there was a difference of

opinion as to its nature ; and we find the same difference arose respecting the cases in July 1720, one medical man considering them a worm fever, and the people accusing others of mistaking ordinary fevers for Plague. Admitting that the disease of 1719 was doubtful, still there are facts to show that cases unquestionably identical with Plague occurred in Marseilles in April 1720, at least five weeks before the ship arrived from Syria. Mead admits this, but denies they were Plague, because they could not be ascribed to the Syrian contagion.

M. Deidier says, " Le vaisseau soupçonné d'avoir apporté la peste de Seyde (Sidon) n'arriva que le 25 Mai 1720 : cependant Mademoiselle Augier mourut dans cette ville du 19 ou 20 Avril : il lui avoit paru le 13 du dit mois une parotide, sur laquelle on appliqua des cataplasmes, qui ne purent la garantir de la mort. Mademoiselle Constant, âgée de vingt-huit ans, eut un charbon avec fièvre, dont elle faillit à mourir du 3 ou 4 Mai. Environ le 20 Mai, Mademoiselle Boze fut saisie d'une violente fièvre continue : elle sua un peu le 2^{me} et le 3^{me} jour. Le 5^{me} elle fut quitte de fièvre, et on s'aperçut au plis de l'aîne droite d'un bubon de la grosseur d'un œuf de poule, qui vint à suppuration, qui fut ouvert et conduit à parfaite cicatrice. Ce sont là certainement toutes les véritables marques de la Peste de Marseille que nous avons vues dans toute la ville, et que nous voyons tous les jours dans l'hôpital." (*Traité*, p. 204.)

These three cases, one with a parotid as early as April 13th 1720, the other with a carbuncle on the 3rd or 4th of May, and the third with a bubo in

the right groin, appearing on the fifth day of a fever which commenced about the 20th of May, are proofs that symptoms identical with Plague occurred in Marseilles previous to the arrival of the suspected ship.

The suspicion attached to her arose from the Plague existing in Syria, whence she had come. It had not been declared at Sidon on her departure, but it broke out afterwards. She touched at Tripoly and Cyprus and Leghorn, after having lost several of her crew. Three died at Leghorn, and, according to the report of the surgeon and physician of the quarantine hospitals, of malignant pestilential fevers. On the 25th of May she arrived at Marseilles. One of the crew died a few days after, and an officer of quarantine put on board of her died on the 12th of June.

If this last case was attributable to the contagion brought by Captain Chataud's vessel, how are we to account for the cases previous to his arrival? M. Deidier says, that the baggage was sent into quarantine, and that none of the crew were admitted into the city till the 14th of June. But a lady who had been taken ill on the 16th of April, and who had a parotid on the 28th of May, died two days after its subsidence, on the night of the 1st and 2nd of June; and a schoolmaster complained of a carbuncle on the left thigh on June 2nd. On the third day "*la fièvre le prit avec douleur de tête, la langue sèche, les yeux égarés, et on s'aperçut au plis de l'aîne d'une petite tumeur comme une noisette, qui vint à suppuration, et fut menée à parfaite cicatrice en vingt-cinq jours.*" (p. 204.)

These are all the facts which bear upon the commencement of the epidemic, and which appear to me to show that endemic causes existed to account for it, independent of all imported contagion. The disease did not extend far till the beginning of August, prevailed fearfully through August and September, declined fast in October and November, and nearly disappeared in winter. "Between February and July 1721," Russell remarks, "pestilential accidents occasioned from time to time alarm in the city, but the distemper, to whatever cause it might be owing, *did not spread*, and it terminated entirely after the summer solstice."

As is usual in so formidable an epidemic, many died suddenly, or within two or three days, under all the symptoms of congestion, coldness, small pulse, intense headache, pale leaden countenance, without eruption of any kind. In others, excitement supervened, with a sense of internal burning heat, excessive thirst, red livid countenance, &c., with buboes, carbuncles, black or livid pustules and petechiæ. Others attacked in this way recovered spontaneously after the second or third day, or from the critical eruption of carbuncles or buboes, which went on kindly to suppuration; and others had these eruptions with no other symptom of illness. The number included in these mild attacks was estimated at from 15,000 to 20,000, a fact which incontestibly proves, that if Plague consist essentially in the bubo or carbuncle, it is a trifling malady; and, on the other hand, that the fever attending it, either in its stage of congestion or excitement, constitutes its formidable character.

Bertrand (*Traité*, p. 371.) says, "Les uns avoient le mal benin et léger, les autres l'avoient violent; les uns et les autres avec ou sans éruptions extérieures. Ceux qui ne pousoient rien au dehors, voyoient terminer leur fièvre en quatre ou cinq jours par un doux purgatif ou par une sueur qui succédoit à l'opération d'un léger émétique. . . Les symptômes qui accompagnent la maladie sont les mêmes que ceux des fièvres malignes, avec cette différence, qu'ils sont ici plus violens. . . Quelquefois le mal prenoit en guise de fièvre Intermittente, par un petit frisson aux extrémités, qui duroit quatre à cinq heures, et revenoit tous les jours à la même heure, suivi d'une chaleur forte, avec les symptômes les plus fâcheux: aussi le second ou le troisième accès emportoit le malade." (p. 373.)

Verny (*Traité*, p. 321.) reports a case under the form of a malignant Intermittent; and Chicoyneau (p. 323.) another under that of a mild Intermittent. This last was the case of a young lady, who was attacked October 2nd, 1720. "Son mal se manifesta par les frissons, la fièvre, et une tumeur douloureuse dans le plis de l'aîne. Nous fumes appelés deux jours après, et l'ayant visitée vers les huit heures du matin, nous n'observâmes ni fièvre, ni aucun symptôme que le bubon: mais elle nous raconta que tous les soirs vers les cinq heures elle sentoit quelques frissons, qui étoient bientôt suivis de chaleur et de fièvre, laquelle, après avoir duré toute la nuit, se terminoit sur la matin par quelque légère sueur, après quoi elle restoit libre tout le reste du jour, ayant bon appetit. Etant revenus vers les cinq heures du soir, nous la trouvâmes dans le chaud de

la fièvre, le frisson étant déjà passé." She refused all remedies. The next day "l'accès étoit passé comme les jours précédens, mais ne nous lassant point de lui représenter vivement que cette fièvre benigne deviendrait maligne et pestilentielle, elle se laissa enfin persuader de prendre du Quinquina quatre fois par jour. Les accès disparurent entièrement dans deux jours, et le bubon ayant été traité à l'ordinaire, nous eumes la satisfaction de la voir en peu de temps hors d'affaire."

M. Emeric, in speaking of the Plague at Aix, (*Traité*, p. 218.) says, "Il arrive, mais rarement, que le mal se masque par tous les signes d'une *fièvre double tierce*, et ce déguisement dure tout au plus jusqu'au troisième accès, et alors il se démasque par tous les symptômes de peste, tant intérieurs qu'extérieurs."

These facts unquestionably associate Plague with the ordinary periodical forms of disease. Those cases marked by intense congestion, or by a precipitate irregular excitement, terminating fatally within a few days, without the manifestation of any periodical character in the fever, are analogous to what occurs in epidemics of Yellow fever. That there were slight cases of four or five days' duration *without any eruption*, terminating by sweat, we know on the authority of Bertrand, and he distinctly says that the symptoms of Plague were like those of malignant fevers, only more violent. He, as well as Verny, Chicoyneau and Emeric, report some cases decidedly of an Intermittent character, and there was a very large number of cases attended by erup-

tions, in which the fever was slight or altogether absent.

The inference that the Plague was not owing to contagion is supported, 1st, by the fact that cases probably occurred in 1719, but certainly in April and May 1720, before the ship arrived from Syria which was accused of bringing the contagion; 2nd, by no disease having been communicated, to all appearance at least, at Leghorn, where she touched, and where three of her crew died; and 3rd, by the Plague itself, in many cases, not differing from the usual endemic fevers of the South of France, excepting in the frequent, but *not invariable*, occurrence of the bubo or carbuncle.

If contagion from Syria produced the epidemic, it is astonishing that the disease did not spread over France, for it was not confined to Marseilles; and the sources of contagion from persons, fomites, goods, must have been infinite. In some places exposed to all these sources, the malady was unknown. "Les précautions, les passages fermés, la crainte de la mort, ne furent pas des barrières assez fortes. Il s'échappoit beaucoup d'habitants des lieux pestiférés; l'avidité transportoit secrètement des marchandises suspectes ou infectées, cependant ces marchandises ne répandirent point leur venin dans les endroits où elles passèrent. Le Languedoc, le Velay, le Dauphiné, et tous les lieux voisins du Rhône, devoient recevoir les premières impressions : ces pays étoient pour ainsi dire inondés des écoulemens de la peste; mais une providence singulière les preserva de ce fleau durant trois années." (*Traité*, p. 13.)

M. Rochevalier, (*Traité*, p. 602.) in speaking of the Plague at Marvejols and its neighbourhood, says, "On n'en peut soupçonner le vice de l'air, puisqu'un très grand nombre de villages très voisins des lieux pestiférés ont été exempts de la maladie, et que de sept cens personnes qui sortirent de cette ville pour camper dans les vignes des environs, aucun ne fut malade, pendant que de 2250 personnes que restèrent dans la ville, il n'y en eut qu'environ 50 qui ne furent point attaquées de la maladie;" a fact strongly in support of a local contamination of air, and against the idea of contagion, especially as the disease originally appeared in November 1720, when it excited little alarm, and did not spread sensibly till May 1721.

With reference to the morbid appearances observed in this Plague, there is nothing definite recorded, to enable us to compare the lesions of the intestines with those considered by Louis as pathognomonic of Typhus. Inflammation and gangrene, like carbuncle, in the ileum, are frequently noticed; but whether the glands of Peyer were implicated, it is impossible, from the vague descriptions, to say. In many there were marks of congestion in the head and lungs. Bertrand says, (p. 370.) "L'ouverture des cadavres n'a rien découvert de particulier sur la nature du mal. Dans les uns, tout a paru dans un état naturel, et dans les autres on n'a trouvé que quelques légères inflammations dans le bas ventre, qui étoient certainement les dernières productions de la maladie."

M. Garidel, of Aix, says that there were "des charbons et des pustules charbonneuses et d'autres érup-

tions sur les membranes intérieures de l'estomac et des intestins." Sometimes "taches pourprées repandues sur les membranes interne et externe des intestins grêles" are noticed. In one case "presque tout l'ileum étoit gangréné;" and in another "nous vîmes sur l'intestin ileum deux charbons éloignés l'un de l'autre de deux travers de doigts." Meteorismus, enlargement of the spleen, and great quantities of worms, are often noticed. (*Traité*, pp. 404, 548, 595, 596.)

I have already quoted from Russell a confession that the Plague existed but did not spread in Marseilles in 1721, though it was spreading in other places at no great distance; and I shall dismiss the subject with the following remarks, which appear to me very applicable.

"Si les principes de la peste sont si feconds, Marseille devoit être une source inépuisable de contagion. Car si après la désolation de cette ville il étoit arrivé un nouveau vaisseau infecté, si les marchandises eussent été repandues, n'auroit-on pas été dans une juste appréhension pour le retour de la peste? Mais s'il étoit arrivé des vaisseaux infectés toutes les semaines, une nouvelle infection n'eut-elle pas paru inévitable? Or lorsque la mortalité a cessé dans Marseille, toutes les maisons étoient des séjours empestés, les meubles étoient infectés, tous les récoins cachotent les semences de la peste, les habits des morts, tout ce qui avoit servi à leur usage, tout étoit contagieux. Quoi! quelques porte-faix, quelques étoffes échappées d'un vaisseau infecteront tous les habitans d'une ville, et toutes les maisons, toutes les hardes, les dépouilles de trente mille pes-

tiférés, ne la répandront pas, ne la perpétueront point ? on en approchera sans danger, une infinité d'hommes qui s'en serviront, ou qui les purifieront, n'y trouveront plus un venin actif, c'est à dire, qu'une ville aura péri par une étincelle sortie du vaisseau de Chataud, et une incendie universelle ne causera aucun ravage ? (*Traité*, p. 112.)

CHAPTER VI.

FEVERS OF ITALY.

I SHALL now turn to the consideration of the ordinary forms of fever, tracing them in the works of a few of the more distinguished medical authorities, from Italy and the coast of the Mediterranean, through Paris to Great Britain. It will be found that the periodical type is almost universal in the South, and that the continued is the representative of the same disease in the North; that if the last ever distinctly occurs in Italy, or the first in Britain, they are *exceptions to a general rule*.

Of the fevers of Italy, I shall first offer a sketch from the works of Torti and Lancisi; the first affording the most precise and elegant description of the pernicious fevers of this part of Europe, and the other what has been generally considered the fullest evidence of their origin from local contaminations of atmosphere.

The work of Torti * is especially valuable for the minute details of the Protean forms of Marsh fever, though his observations were made in too southern a latitude, viz. at Modena, lat. $44^{\circ} 34'$, for the unmixed form of Continued fever, as it occurs generally in Britain, to have been presented to his view. He considered that all the varieties, from the mild to the most malignant Intermittents, and from these, with distinct intermissions, to the Continued form of fever, were modifications of one disease; and he

* Francisci Torti, *Therapeutice Specialis*. Mutinæ 1712, 4to.

fully verifies the accuracy of Dr. Armstrong's observation, that the types of fever pass and repass into each other; that inflammation, as an internal condition, forms, to all appearance, no part of the intermittent type, and that its supervention is one of the circumstances which gives rise to the continued form. He also shows, what I have endeavoured to exemplify in the sketch of the fevers of America, that temperature has a marked influence on the type of fevers, their tendency to the continued form increasing as the cold of autumn deepens into winter; and this apparent law, which holds with respect to the mean temperature of the seasons of any given place, may probably be applied to explain the more marked contrasts which are observable in the character of the fevers of those countries which differ essentially as to their mean annual temperature. While the high heats of summer and autumn give a precipitancy in epidemic years to the progress of fever, which exhibits the intermittent or the remittent character, the lower temperature of winter is productive of a disease of a more protracted duration, and of an evident continued type, even in Italy: and by contrasting the fevers of Great Britain with those described by Torti, we may at least approximate to a reasonable explanation of their difference, by considering that the influence of climate modifies the expression of fever in the one country as compared with the other, in the same way as winter affects it, compared to the summer or autumn, in the milder climate alone.

The great object which Torti had in view was to exemplify not only the various forms of fever, but

the efficacy of bark in their cure ; and it is interesting to observe, that while he triumphantly shows its specific power in arresting the most formidable periodical fevers, its virtues fail in proportion as these approach to the continued form ; and he distinctly says that it is far less available in the winter than in the summer fevers.

I shall offer a rapid sketch of his classification of fevers, in order that the observations applicable to the varieties may be more clearly understood.

He admits of two genera: the *Continued* and *Intermittent*.

The Continued he subdivides into the *Continent*, *Remittent* and *Proportionate*.

The Intermittent into the *Distinct* and *Subintrant*.

Of these, the *Continued-Continent* has one uniform tenour, without exacerbations or remissions ; and the *Proportionate* is a compound of the *Continued-Remittent* and the *Intermittent-Subintrant*, having something in common to both, as if arising from the mixture of the ferment of each

Torti admits (p. 261.) that it is of little consequence what speculative notions are entertained as to the cause of fever, and the *modus operandi* of bark ; but he objects to Morton's idea of the one being a poison, and the other an antidote, and prefers calling the cause of Intermittents a *ferment*, and bark a *specific absorbent*. This ferment is some heterogeneous fluid, not miscible with the blood, and which, when poured into it, occasions a morbid fermentation or effervescence, until it is expelled. It is reasonable, he says, (p. 609.) to conclude that

malignant fevers arise from the mixture of the ferment of an Intermittent with that of a Continued fever; and hence "consonet probabilitati hæc conjectura, *Febres nempe malignas ab iisdem causis ac Intermittentes, magna saltem ex parte ortum ducere.*"

The ferment "Febrium suapte naturâ Continuarum *intra* massam sanguineam oriri, delitescere, ac exaltari; fermentum vero Intermittentium *extra* sanguinem gigni, ac commorari, ad tempus et ad tempus in eandem sanguinem periodice influere:" hence it follows that the *Proportionate*, which has the continuity of Continued fever and the periods of an Intermittent, must partially consist of the ferment of each.

These speculations are perhaps of no other value than to show that Torti considered the types of fever as mere modifications of disease, and that the embarrassment which has weighed upon every mind in the attempt to account for the phænomena of fever, prevailed equally in his.

He expressly says that the ferment and the varieties of fever it produces, are but modifications of *one cause and one effect*, and that any one may satisfy himself of the fact by considering the different effects of one and the same poison on the body. The passage is too important to be omitted. (p. 309.) "Quod autem unum idemque fermentum in diversis subjectis, ætatibus, tempestatibus, possit varias venenositatis species suscipere, (tam ob multiplicem, plusque vel minus activam pravitatem suam, quam ob diversum dispositionum habitudinem subjecti, in quod agit,) quales requiruntur ad diversarum perniciosarum differentias constituendas, facile sibi sua-

dere poterit quicumque, ab uno eodemque veneno; æqualem in se ipso semper acrimoniam servante, prout altiora sensim corporis penetralia pervadit, diversisque ejusdem corporis succis sese immiscet, ea omnia etsi varia et opposita animadvertat successive produci symptomata, qualia in enarratis Februm speciebus descripsimus. Dico igitur fermentum intermittentium, tam salutarium quam perniciosarum, idem esse quo ad rem ipsam, habitu respectu ad intermissionem et ad periodum; accidentaliter vero differre habitu respectu ad malignitatem uni adjunctam et alteri non ;” and he appeals to the efficacy of bark, which cures equally the mild or the malignant Intermittent, adapting its use to the exigency of the occasion.

It is one of the most remarkable circumstances connected with Marsh fever, that though the general character of the disease in any one season or year may be mild, yet that here and there cases are met with of an anomalous character, partaking of the malignity which is more peculiarly observable when the disease is extensively prevalent as an epidemic, and when a large portion of the cases are severe. This holds good with the Typhus of this country, and with the periodical fevers of Italy ; and I know of no way in which the anomalies are to be explained, except on the supposition that the condition of the body or the degree of the remote cause is concerned in the occasional aggravation of the effect produced. The question is one of interest, if it could be solved, because as these isolated cases of malignity in common years are multiplied disproportionately perhaps in epidemic years, if we

could satisfactorily account for the one, we might arrive at the solution of that which gives an epidemic prevalence to the other.

Torti, (p. 191.) in speaking of Intermittents, says, that any one of them, but especially the Tertian, whether of summer or of autumn, sometimes assumes such a degree of latent malignity in the first paroxysms, that although the physician is apprehensive of no danger, it proves fatal at the third, fourth, or fifth period; and that cases of this nature, though not to be compared in point of frequency with mild Intermittents, are yet not so infrequent but that examples are met with every year; and he adds, (p. 192.) “*imo audeam asserere illas in quibusdam constitutionibus, præsertim fervidioribus, et prope dies caniculares, necnon etiam ultra autumnale equinoctium, adeo familiariter nonnunquam grassari, ut nescio quid, fere dixerim, epidemici redolere videantur.*”

We here find Torti referring the aggravated effect to increased heat, a circumstance which is so often combined with seasons attended with epidemic disease, and which probably not only operates by increasing the excitability and the irritability of the body, but by giving intensity and diffusion to the remote cause.

It is difficult to say what gives this precipitate fatality to a disease so mild as the Intermittent often is, but we may conjecture two things, viz. the effect on the vitality produced by the congestion and the subsequent excitement, and the alternation of these states; and in some cases, when the fever becomes continued, by the inflammation that is induced.

The languor that follows a fit of common Ague gives some probability to the one idea; and the difficulty of maintaining an equal balance of the circulation in aggravated cases, is perhaps explicable on the supposition of an exhausted vitality; and inflammation, from its known effects, may easily be conceived, in a disease of such precipitancy, to contribute powerfully to the destruction of life.

Torti, however, does not admit that inflammation makes part of the internal condition of Intermittent fever; justifying, therefore, the idea of Dr. Armstrong, that it is *simple fever*. At p. 598. he inquires what is to be done if any disease usually associated with Continued fever, as inflammation for example, be associated with an Intermittent; and he replies that the case is possible, but so rare that it cannot fall under any general rule.

That inflammation is concerned in malignant fevers which change their type from the distinct Intermittent, he affords proof of his own and from Mercatus, Spigelius and Sennertus. These cases; though they may retain some traces of their periodical character, are what Dr. Armstrong considered as Remittents, and to which he ascribed inflammation, as the condition which gave them their character of continuity, and took from them their entire intermission.

In speaking of the Semitertian, (p. 645.) Torti says "it would be useless to give bark, if inflammation occurs, as Spigelius and Sennertus say is the case, "*quæ febri cæteroqui Intermittenti fixam continuitatem adjungit.*" In showing how Tertians become pernicious he quotes Mercatus, (p. 196.)

who says it happens "occasione membri alicujus præcipui in quod decumbat humor, quem natura à vasis ad eorum extrema transmittit; nam cum membrum ex præcipuis sit, dubium non est, vitæ periculum impendere ex læsione quavis in ipsum illata."

Bark, therefore, is useful in the simple Intermittent, and in the pernicious, when the internal condition is not that of decided inflammation. Alluding to the embarrassment as to its exhibition in fevers which change their type, he says, (p. 550.) that the difficulty is with respect to the first days, in which the fever sometimes is not intermittent, but verging towards the continued; and that many acute fevers begin in this way in those seasons and constitutions in which Intermittents usually prevail, viz. in summer, autumn and spring, but rarely in winter, "quo tempore febris continua ut plurimum verè continua oritur, et sibi semper, si non æqualis, saltem valde similis: secus aliis temporibus, ut dicebam, quibus potius videtur, quod febres suapte naturâ oriantur intermittentes, nec nisi per accidens, etsi quam cito, in continuas degenerent."

It must be borne in mind that the simply Continued fever of Torti is not a fever without remissions; it includes the Remittent as well as the *Continent*, which has neither exacerbations nor remissions, a form which was comparatively rare at Modena.

He endeavours to explain how fever becomes intermittent or continued by the modifying effect of temperature. In speaking of the indications which are to regulate the exhibition of bark in the *Proportionate*, which it will be recollected he con-

siders a compound of the Continued and Intermittent, he says, (p. 618.) that we must take into consideration not only the *season* in which it appears, but its *origin* at all times. With respect to season, we must distinguish those which appear in the middle of summer and in winter. “Quæ enim hyberno tempore regnant (regnant autem frequentius, quam tempore fervidiori febres Continuae Proportionatæ) de more graviores sunt, faciliusque de simpliciter Remittentium naturâ prædominante participant, quam quæ regnant æstate, vere, aut etiam autumno; quibus temporibus ex intermittentium subintrantium radice solent assurgere: imo ausim dicere, febres omnes Continuas Proportionatas hyeme ortas, non alias esse, quam eas quæ æstate sunt Intermittentes aut tantummodo Subintrautes. Omnis enim earum diversitas videtur consistere in hoc, quod hyeme sanguis in sua compage strictior, et, ab impedita transpiratione, aptior ab intrinseco ad fermentescendum febriliter, eo ipso, quod inficitur fermento extraneo febrium Intermittentium auctore (quod fermentum tunc temporis inertius est, minusque activum) ab eodem non aliud ferme recipit nisi primam occasionem effervescendi, periodice repetitam; sed a se ipso, suoque ex penu, nempe ab ipsa intima dispositione sua abunde habet, unde susceptam effervescentiam conservet jugiter, ac ultra protrahat, fermento videlicet insito supra fermentum extraneum præpollente illudque secum rapiente et in propriam naturam transmutante.”

This hypothesis is based on the conjecture that in an Intermittent the ferment is formed *without* the blood periodically, and poured into it; and that

in the Continued it is formed *in* the blood itself; so that in the one case the morbid fermentation or effervescence depends on a foreign matter, which excites fever until it is expelled; while in the other, the blood itself is in a morbid state. In winter the blood is thicker, and the perspiration checked; hence when the foreign ferment of the Intermittent is poured in, it cannot be expelled, and the consequence is that the blood becomes contaminated, so that its own innate effervescence predominates over the effect of the periodical effervescence of Ague, which at that season is naturally inert, and hence the fever partakes of the continued more than of the intermittent character.

I place no value on these speculations, as I have before remarked, except as they tend to prove two things, viz. that Torti believed there was no essential difference in fever; and that the continued form was the product of winter, rather than of any other season; and he attempts to account for this by the effect which cold has in rendering the blood thicker, and in impeding perspiration. His theory no doubt was suggested by the phænomena of Ague, in which congestion and excitement are so promptly succeeded by sweat and temporary convalescence. The supposition of a morbid matter periodically poured into the blood would account for the repetition of fever, and of a periodical discharge of that matter in sweat would explain its subsidence: but in Continued fever there is no such rapid recovery; the heat is protracted; there is no critical discharge of sweat, and hence he inferred, the blood itself was in a morbid state; and owing to the greater

frequency of Continued fever in cold than in warm seasons, he explained the continuity of fever by the impediment which a low temperature offers to the cutaneous discharge.

The continuation of the passage last quoted refers to the mode in which the Intermittent is formed as contrasted with Continued fever. He says, "*Oppositum plane solet succedere, saltem ut plurimum, æstivo tempore, tunc enim laxior redditæ sanguinis compages, liberaque gaudens transpiratione, et depuratione universali, minus disposita est, quantum ex principiis intrinsecis, ad febriendum tenaciter et assidue, adeoque, etiamsi aliqua in eodem degat impuritas, quæ febrem sit potius inducere, ea tamen levior est, aut citius faciliusve dissipabilis, ac hyeme. Quamobrem etsi accedat illi de novo fermentum febrile extraneum (quod tunc temporis activius est, fortius atque vehementius) non propterea transit istud in naturam fermenti præexistentis, sed illud superat ac secum rapit, et dispositionem sanguinis intrinsecam qualemcumque ad febriendum assidue, convertit in dispositionem ad febriendum periodice, seu ad defæcandum periodicâ effervescentiâ ab intestinis inquinamenti se ipsum.*" Hence, he adds, the Proportionate is more successfully cured by bark in summer than in winter, because it approximates in hot weather to the subintrant Intermittent, and to the Remittent in cold.

At Modena, therefore, temperature, according to Torti, decidedly influences the type of fever, and in winter those cases which would have been intermittent in summer partake of the continued form. In higher latitudes, where Continued fever is the gene-

ral type, the remittent form is confined to the hotter season ; and while in Italy the lowest grade is the Intermittent, which passes to the Subcontinued as the highest, in Britain it is the Remittent passing to the Continued. This is another exemplification of the law of temperature, so universal, that while the remittent or subcontinued type is naturally the appropriate expression of fever in the winters of Italy, we never could expect to meet with it in the winters of this country, at least as a general occurrence.

The Proportionate or Remittent, however, may occur in Italy in other seasons than winter, because other circumstances than temperature will give aggravation to an Intermittent, especially inflammation. Torti says, (p. 291.) that an Intermittent may degenerate into Continued fever in the progress or at the beginning of the disease, and if during the progress, the change may be rapid or gradual. It may be suspected, when the fever "*cum paucis aut nullo rigore solet invadere, sed potius cum sensu caloris ; si quidam appareat intermissionis die mor-
dax ad tactum calor, qui aliquam etiam secum trahat
pulsus perturbationem, sitim, aut linguæ siccitatem,
quæ omnia incendium universale jamjam disponi,
præmonstrant.*" And he adds, "*Facta vero jam
continua essentialiter ac perniciosa febris, licet len-
tius procedat, interimatque ac ceteræ perniciosæ,
maximo tamen et diutius metuendo non caret peri-
culo, quamvis ab origine fuerit Intermittens. Etenim
trahit illa nonnunquam secum sæva quævis sym-
ptomata, quæ secum pariter deferunt malignæ ipsæ
primariæ, v. gr. parotides, quas non semel in hujus-
modi febribus contingit observare, perpetua deliria;*

convulsiones, aversiones à cibo, et maxime à quocumque potu, et similia febrium summe malignarum ac pestilentium propria."

We observe in this passage an admitted gradation from an Intermittent through a pernicious to a pestilential fever, the aggravated form, arising out of the milder, acquiring by degrees those symptoms which characterize the more malignant cases, which arise as such from the first; and among the more formidable symptoms the parotid is enumerated, thus establishing a distinct connexion between this variety of glandular tumour and the cause of Intermittents. Now such cases so characterized are by no means infrequent in the epidemics of Plague, and are not considered as differing from that disease, any more than the Intermittents or the Remittents, occurring in the years 1793 or 1798, in Philadelphia, were considered by Rush to differ but in degree from Yellow fever. It may be thought overstrained to seize hold of this observation of Torti, and extend its meaning beyond the limits he has assigned to it. But it is one which appears to me susceptible of a legitimate extension; and though he has carried it no further from his own investigations than to pestilential fever, with parotids and other common symptoms of malignancy, yet it is evident that on an investigation of the writings of those who have expressly written on Plague, they take their departure from the very point at which he stops, so that connecting the results of his observations with theirs, there actually appears to be no abrupt line of separation between Ague and its aggravation into the true Plague.

I shall now turn to the description of the varieties of Intermittent fever as given by Torti, omitting all consideration of the benignant form, which requires no illustration; my object being to show that there is not only a malignancy imparted occasionally to it, but a gradation of effect, which connects it with the worst forms of fever.

I have already said that he divides the Intermittent into the *Distinct* and the *Subintrant*, of each of which he makes two subdivisions, viz. the *Distinct* he divides into the *erratic* and *periodical*, and the *Subintrant* into the *communicant* and the *subintrant*, properly so called.

The *Distinct* Intermittent has distinct accessions. It is *erratic* when it has no fixed type, no certain circuit, no determinate period; and *periodic* when these occur in a stated order, as in the *Quartan*, *Tertian*, *Quotidian*, which are *true* or *spurious*, *simple*, *double*, *triple*. There are also *complications* with others of the same or of a different kind, as in the *Semitertian* or *Hemitritæus*; and *degenerations*, or changes of them all into the *Subintrant*, afterwards into the *Continued*, acute or chronic.

Of these, the *Tertian* is most apt to assume a malignant character, and the malignant *Tertian* he divides into the *solitary* and *compound*. The *solitary*, from its own depraved nature, tends towards the acute, malignant and pernicious form, as in the *subcontinued*. The *compound* suddenly becomes malignant from the accession of some peculiar symptom, worse than the disease it personates and than the fever which it accompanies: of this he makes two classes.

1. The Colliquative, including four varieties, viz. the *Cholerica*, *Subcruenta*, *Cardiaca*, *Diaphoretica*.

2. The Coagulative, including three varieties, viz. the *Syncopalis*, *Algida* and *Lethargica*.

A pernicious periodical fever Torti defines (p. 271.) as one “quæ, simulatâ, ex vi circuitûs, effigie benignitatis, lethalis, et mille accidentibus periculosissimis implicata existit.” It either intermits, owing its dangerous character to some formidable symptom, accompanying the febrile paroxysm, “cujus ferociam exitialem minime tollit intermedia quies;” or the intermission being lost by degrees, it tends more or less rapidly to the continued and acute form, “cum extensione gravium quorundam variorumque symptomatum ad tempus turbulentæ quietis.”

The pernicious Intermittent is fatal in seven ways, from the predominance of one peculiar symptom, constituting as many varieties of the fever. These symptoms are,

1. Violent vomiting and purging, as in Cholera and Dysentery.
2. Purging, as in the Hepatic or Atrabiliary flux.
3. Cardialgia.
4. Cold sweat.
5. Syncope.
6. Extreme coldness, followed neither by heat nor sweat.
7. Apoplectic sopor.

1. *Cholerica*.—The pernicious Tertian is often fatal in this form, when about the beginning of the paroxysm, with which usually a moderate degree

of bilious vomiting and purging is associated; then comes on (p. 275.) “vehemens, violentaque ac simultanea excretio sursum atque deorsum humorum vitiosorum, quibus nonnunquam singultus adjungitur, vox clangosa aut rauca, oculorum concavitas, angor stomachi, sudatiuncula minuta circa frontem, pulsus exilis, extremorum perfrigeratio aut livor; uno verbo, omnia accidentia quæ Cholera morbum comitari solent;” from which, however, this affection is to be distinguished, inasmuch as it is a mere symptom of the fever heightened to an unusual degree of intensity, and following the period and motion of the fever, as the shadow does the substance. The symptoms are not always in number or degree as above described, but their aggravation, and even death, is to be apprehended in the subsequent paroxysm, “intermedia quiete ad nihilum suffragante, præsertim si morbus adhuc fuerit in augmento.”

Dysenterica.—Sometimes it happens that an affection more like Dysentery than Cholera accompanies the invading paroxysm, “quatenus humores in primis biliosi, et aliûs etiam naturæ, tam acres ac erodentes excernuntur, ut post ipsos mucus cruentus exeat, tam sursum quam deorsum, cum tenesmo et torminibus, stomachique dolore, perinde ac si illius membranæ divellerentur et excoriarentur, ut revera œsophagum excoriari intuemur in humoris excreti transitu et vomendi conatu.” Torti was led to look upon this variety as less dangerous than the former; “et licet febris in hoc casu videatur intensior, est tamen magis expansa, nec secum fert funestam illam perfrigerationem, angorem, ac suda-

tinuculam, etsi singultum admittat, jactationem irrequietam, linguæ scabritiem, &c., unde facile in Continuum migrat, aut inflammationem aliquam minatur."

The observations accompanying these varieties are highly interesting. The description of the choleric form notices the livor of the extremities; and in the dysenteric, the fever was more intense and expanded, and had a greater tendency to assume the continued character.

We have seen Cholera and Dysentery frequently associated with the fevers of America, both periodical and continued,—sometimes blended with the Intermittent, or distinct as a Continued fever; and at Modena the same association is observed. The supervention of inflammation would probably in Italy give the dysenteric variety a continued remittent form, to use the language of Torti. In Dr. Mann's observations in Vermont, where the fever was Continued, there was no distinction between it and Dysentery, except in the peculiar symptoms of the last affection: and considering both the Fever and the Dysentery as one disease, the former might be looked upon as fever, concentrating its force in other parts than the bowels, prone to the impressions of malaria, and the latter with those impressions concentrated in the large intestines.

At p. 406. Torti relates a remarkable case of the dysenteric variety in a servant labouring under a double Tertian, attended with bilious vomiting, who "ingruente tertio paroxysmo potiore, materiam primo porraceam et vitellinam vomere cœpit atque

dejicere, mox mucositatem cruentam copiosam, qualem in verâ dysenteria contingit observare. Quarto paroxysmo graviore, qui motu obscuro, nulloque fere frigore se prodidit, rediit longe violentior ac prius eadem excretio ex muco copioso et cruore mixta, per alvum quidem abunde, sed satis diminute per vomitum."

The peculiarity in this case was that the excretion, which any one looking at would have taken for matter passed by stool in ordinary Dysentery, was vomited up, "dolores atque cruciatus ventriculæ præcise occupabant, non vero intestina, in quibus tormina nulla perſentiebantur, licet ab omni tenesmo non essent immunia." This patient another year had a similar attack, with the same symptom, a circumstance which would seem to show that the expression of disease probably depends on individual predisposition; for this, varying in different persons, would explain the variety of the symptoms attending fever, without the necessity of supposing any variation in the nature of the remote cause.

At p. 400. he relates a case of the choleric variety, a simple Tertian, in which, on the fourth or fifth accession, "tam immanis, tamque ferox, tam frequens, tamque copiosus vomitus supervenit, cum simultanea et repetita dejectione materiæ biliosæ, serosæ et corruptæ, ut æger jam fere confectus, universaliter perfrigeratus jaceret cum pulsu ferme abolito, oculis cavernosis, singultu, anxio anhelitu, supinoque decubitu, impotens se vel erigere vel convertere in latus," &c. And both the cases were cured by bark.

2. *Subcruenta*.—This variety is characterized by a discharge from the bowels, like the washings of flesh (“*loturæ carnium similis*”), which the ancients called the *Hepatic flux*. “*Solet nonnunquam vel invadente vel etiam declinante accessione suboriri placida quædam, frequensque ac copiosa dejectio, quæ intra paucas horas, nullo fere sensibili ægrotantis incommodo, ad magnam molem et pondus excrescit. Materia ista plane serosa videtur, sed subcruenta;*” and the patient was reduced to an extreme degree of debility, with a tendency to faint on motion, a small pulse, coldness of the extremities, but without thirst, and with his mind entire. “*Evanescente febre, sensim sedatur tumultus, qui raro diem intermissionis occupat, si vero occupet, veh! die sequenti! Cum autem, recurrente accessione, idem recurrat alvi fluxus, augeaturque et ipse circa morbi statum (incrementum tunc suscipientibus accessionibus) vix fieri potest, quin intra duos vel tres ab invasione symptomatis paroxysmos, æger succumbat.*” (p. 276.)

A modification of this variety is the *Atrabilaris*, which is more formidable, and attended with a discharge of black concrete or dissolved blood, “*quæ dejectio si copiosa sit et ad libras ascendat, ut assolet, supra memorata symptomata facile infert, et successivam, sub specie placidæ cujusdam defec-tionis, celeriter mortem.*”

Torti (p. 411.) relates the case of a soldier, who in a Tertian passed a quantity of black blood, partly concrete and fluid, like the atrabiliary discharge of the ancients. “*Copiosam valde observare erat, frequentem et cum impetu erumpentem hujusmodi*

dejectionem, hominemque insimul facie Hippocratica plane insignitum, frigidum in extremis ac lividum, totum cadaverosum, pulsuque ferme carentem, et in lacu tetræ hujusce materiæ præ paupertate sepultum potius quam natantem, ab illa tamen irritis conatibus et jactatione irrequieta sese expedire tentantem." He was cured by bark.

3. *Cardiaca*.—In this the patient, "dum adhuc rigor et horror infestat, sive etiam dum incipit incalescere," is seized with acute Cardialgia, without any urgent vomiting. If this "acerrimus morsus oris ventriculi" be attended with frequent syncope, a small pulse, sunk countenance, or "luctuosis suspiriis, sitque mordicatio tam ferox, ut pro expiratione reddantur clangores et ululatus, sive brevia deinde sint hujusmodi accidentia et tantummodo torqueant ægrum in principio accessionis, sive usque ad statum ejusdem protrahantur," life is endangered, as the disease rarely continues beyond the fifth accession. (p. 277.)

This is often termed *Syncope stomachica*; and at p. 414. Torti describes the case of a lady, liable to Tertian fever, attended by bilious vomiting and severe pain in the stomach, who was seized, in 1707, in the usual way, except that the pains amounted to actual Cardialgia, which two days afterwards, "per totum principium, augmentum et statum accessionis increbuit, vi cujus ægra sibi erodi et mordicari a canibus aiebat, orificium stomachi. Ejulabat dum poterat, sed sæpius, intercepta voce, deficiebat animo: sicque alternatim ululans, suspiria edens profunda, vomitus inanes tentans et animo deficiens, subfrigida cum minutis circa frontem sudoribus, cum

pulsu exili et crebro, facie semimortuam referente, oculis caligantibus et temporibus collapsis, animam jam prope reddere videbatur." Bark was equally efficacious here.

4. *Diaphoretica*.—In this deceptive variety the fever, without any previous signs of malignity, begins in the usual way, with rigor and cold followed by heat, and perhaps rather premature sweat, which at first appears to lessen the fever, though in reality "potius intenditur febris quam remittitur, imo eo fortior videtur fieri, quo copiosior est sudor. Quod pejus est, frige fit paulatim sudor, et in diaphoreticum sensim degenerat. Sudat perpetuo ægrotans, et diffluit undequaque frigidus sudore perfusus: sicque perpetuo algens et sudans." The pulse is quick, small and weak, the breathing panting, the strength prostrate, but the mind clear, "et sensit homo se paulatim mori. Nisi autem hoc illa ipsa accessione succedat, in proxime futuram tantum protrahitur." (p. 278.)

He gives a case of an old man (p. 432.), who, in the fourth paroxysm of a Tertian, "ab eo sensim refrigerato, et incrementum febris loco declinationis inferente," was reduced to the last extremity. He lay sunk and gasping, having "pulsum potius nullum quam formicantem, sudatiunculam assiduam frigidam, cum carnibus summe frigidis et extremitatibus impense lividis, et non amplius distinguebantur temporaneæ paroxysmi vicissitudines, incrementi aut decrementi."

It is impossible not to perceive a close analogy between this variety of Tertian and the memorable *Sudor Anglicus*, or Sweating sickness, which broke

out in the army of the Earl of Richmond (Henry VII.) in 1485. Mead *, who insists on the contagion of Plague, which must be brought in some way or other from Africa, considered this disease a Plague, "only altered in its appearance and abated in its violence by the salutary influence of our climate;" a singular remark, considering the great mortality, for he admits "its carrying off thousands was a proof of its malignity, which indeed, in one respect, exceeded that of the common Plague itself, for few who were destroyed with it survived the seizure above one natural day." He supposes the epidemic of 1485 was brought from the famous siege of Rhodes by the Turks three or four years before; that of 1506, 1517 and 1551, was "very probably from a Turkish infection," but that of 1528 "may be very justly suspected to have been owing to the common pestilence which raged in Italy." This pestilence was merely a petechial fever, described by Fracastorius, as I shall show presently, the same as that of 1817: and it is remarkable, that while Italy in 1528 was overrun by this fever, and England by the Sweating sickness, the year 1817 was memorable in both countries for an epidemic petechial fever in the one, and Typhus in the other. One of Mead's arguments in favour of imported contagion is, that the Sweating sickness was not peculiar to England, but made great destruction in Germany and other countries. He says, "We had the same kind of fever in 1713, about September, which was called the *Dunkirk fever*, as being

* Mead, Medical Works, 4to. London 1762, p. 262.

brought by our soldiers from that place ; and this probably had its original from the Plague which a few years before broke out at Dantzick, and continued some time among the cities of the north."

These ingenious guesses and suppositions and probabilities are the corner-stones of the unqualified advocate of contagion. A disease essentially contagious always preserves a certain character by which it may be recognised ; yet the fever of Dunkirk was not like the Plague of Dantzick, nor was the sickness of England in 1713 like that of France. Pringle * says, that "Tyengius is very particular in his remark on the Sweating sickness entering Amsterdam with a misty air on September 20, 1529, and after a stay of five days, disappearing, without ever returning again."

: Browne †, in his prefatory epistle to Mead, remarks, that Wedelius and Mayerne call the *Sudor Anglicus* the Hungarian fever; and says, in the *Bibliotheca Anatomica*, there is a description of it as coming from Hungary by some troops sent thither against the Turks by Henry VI.; and he shows that the Dunkirk fever was in England in 1712, the year before Mead says it was brought by the troops from France. "I remember," he says, "the disease very well, and its symptoms, which I was seized with in August 1712, for we had a brisk trade with Dunkirk that year, before the soldiers came over. I am more confirmed in this by applying to my

* Rational Inquiry into the Nature of Plague ; by J. Pringle, M.D. London 1722, p. 5.

† Practical Treatise of the Plague; by Jos. Browne, LL. M.D. London 1720, pp. 6, 11.

books, wherein I find several patients at that time who were afflicted not only with a diarrhoea and vomiting, but were seized with shiverings and dizziness, loss of pulse and dejection of spirits." Mead says, "With us this fever began only with a pain in the head, and went off in large sweats, usually after a day's confinement, but at Dunkirk it was attended with the additional symptoms of vomiting, diarrhoea, &c."

Without stopping to inquire whether the disease of 1712 and 1713 was like that of the fifteenth and sixteenth century, I may remark that the *Sudor Anglicus* resembles the diaphoretic variety of Torti, which, after the appearance of the malignant symptoms, was sometimes fatal in the accession they accompanied, or in the following one, and the signs of fever were completely obliterated. If there were any common nature between them, it would seem that cases which occasionally only appear as anomalies in some years, may in others prevail extensively as peculiar epidemics. It is at all events evident, that cases like the Sweating sickness, like the malignant Cholera, the Yellow fever, Dysentery, and Plague, are met with in isolated examples in ordinary epidemics; and though in the present state of our knowledge we may not be justified in referring all the epidemics of these formidable diseases to those local causes and individual predispositions to which we refer the few occasional cases, yet the supposition that they may have a like origin is worthy some consideration, in the state of general embarrassment we are in as to any satisfactory explanation of their rise and prevalence.

I have already spoken of some of the symptoms enumerated by Torti, bearing an analogy to Plague; and the same is observable generally between his choleric and dysenteric varieties and the epidemic Cholera and Dysentery. If he affords no modification like Yellow fever, it is only necessary to turn to the epidemics of Minorca, where Cleghorn most accurately describes this form of disease as of isolated and occasional occurrence in that island*.

But to resume the consideration of Torti's varieties of Intermittent fever.

5. *Syncopealis*.—Syncope, whether succeeding cardialgia or occurring primarily and alone, is a symptom which renders the Tertian often fatal. "Nullo licet dolore percussus, æger frequenter graviter et absque causa manifesta animo deficit, sive de latere in latus se velit convertere, sive solummodo brachium aut manum tentet loco movere." (p. 279.)

6. *Algida*.—In this a deadly coldness comes on at the beginning of the paroxysm, lasts through the greater part of it, so that there is no perceptible rise in the pulse, or sensible heat: "Quamobrem post horas et horas ægrotantem adhuc in principio accessionis diceres. Siticulosus est, gemebundus, anxius, cadaverosus. Si fatis non cedat, ægre saltem, et nonnisi post longum tempus, incipit tantillum incallescere, et pulsus antea absconditus sese nonnihil exerere;" but it seldom gets above the natural standard, is depressed, with a low degree of heat, and in this state he remains during the intermission, "quoad alia satis bene se habens, sed subsequente

* Cleghorn's Observations on the Epidemic Diseases in Minorca, 3rd edition, London 1768, p. 175.

accessione ut plurimum moriturus." If the cold is less intense, and the revival more decided with respect to the strength and heat, it is rather indicative of a protracted than a fatal disease.

At p. 437. he gives the case of a man in a simple and afterwards a double Tertian, who on the fifth day became so cold, "ut nunquam frigori succedat consuetus calor." Several hours after the invasion there was no perceptible rise of the pulse, nor heat, and the patient complained of nothing but thirst. This state, with the least degree of remission, lasted till the next day, "cumque, paroxysmo paulo post subsequente, singula intendi vidissem symptomata, ægrumque jam algidum universaliter fieri ut marmor, pulsui omnino carere, respirationem augeri, colorem faciei plumbeum, extremitates livida evadere, corticem præscripsi."

7. *Lethargica*.—An apoplectic stupor or lethargy is the formidable characteristic of this variety, and is common to other forms of the Intermittent besides the Tertian. Sometimes it comes on in the beginning or in the height of the accession, increasing or declining with the fever, leaving, however, a tendency to its return in the intermission. When it begins, the patient is "in soporem prorsus, à quo excitatus statim in somnum relabitur: paulo post fit immemor rerum ante gestarum; nonnunquam obloquitur, nec suos conceptus valet exprimere, quandoque balbutiens, vel verba mutilat vel unum pro alio profert. Ingravescente tandem sopore omnino jacet ac stertit naribus, neque ulla voce, ulla vi valet excuti;" or if roused, he falls into the same or into a deeper lethargy, and does not begin to waken till

the paroxysm declines. If hiccough supervenes, he inevitably dies on the third or fourth accession.

Torti remarks (p. 472.), that this lethargic form of fever is more formidable in reality than it appears to be; that a relapse often happens, and the convalescence is difficult. He gives a case (p. 473.) where the lethargy came on about the fourteenth day of a double Tertian: and at p. 476. he relates the case of a Jew, who, after a protracted and variable fever, was first affected by diarrhœa and afterwards by dysentery, which relapsed again into diarrhœa, when the fever assumed the distinct form of a severe double Tertian, attended by profound lethargy, which, declining with the paroxysm, "*stupidus, attonitus et immemor ad plures horas æger remanebat. Cum vero symptoma istud quotidie cresceret, adeo ut fieret quasi continuum, pari pacto, ac tales fiebant, se mutuo excipientes, paroxysmi febriles; cumque à principio accessionis usque ad statum et ultra lethargus tam fortis ingrueret, ut jam mortem minaretur, Corticem proposui, quare brevi à febre, à lethargo et à diarrhœa liberatus est æger.*" He relapsed in three weeks, but the fever was milder, though still attended with a disposition to lethargy, and was cured again by the bark.

At p. 503. is a case of a continued double Tertian, with lethargy on the twenty-fourth day. A parotid behind the left ear appeared six days after, (the fever having subsided two days before,) and another parotid appeared behind the right ear two days after the first. They receded, leaving an irregular fever, which was cured, as the lethargy and fever had been before, by bark.

Professor Clericus, of Modena, reported a case of Torti (p. 506.) of a soldier, who, in the fourth paroxysm of an Intermittent, lay without pulse, in a profuse cold sweat and incessant hiccough. He was tormented by cardialgia and tormina, and had had more than fifty stools that day, of a black colour mixed with blood. "Totum corpus pustulis lividis nigricantibus coopertum, facies cadaverosa, lingua arida, sitis inextinguibilis, urinæ nullæ, summa jactatio." Bark was exhibited, and in a few days the fever disappeared. "Sexta die ad anum tumor apparuit qui suppuratus pristinæ sanitati restitutus est."

Professor Ferrarius also relates (p. 510.) the case of an old woman æt. 65, who was seized with a Tertian, which on the fourth day, "per subingressum continua fiebat, servatâ tamen aliquâ declinatione, sed amissâ penitus apyrexia." On the eleventh and thirteenth days there was heavy lethargy, with obliquity of the mouth and impediment of speech; and on the fifteenth she was seized with apoplexy, followed by paralysis of the right side. Bark was exhibited, and in six days the fever began to subside, and motion and sensation to return to the palsied side, and in six weeks she was able to walk without support.

I have so far given a general description of what Torti calls the varieties of the *compound malignant Tertian*. It will be recollected that of the *Solitary*, which from its own depraved nature tends towards the acute and malignant form of fever, he makes one variety, viz. the *Subcontinued*. By the *Solitary malignant Tertian*, therefore, he means one which has a tendency to the acute continued form, without being attended by any peculiar or distinct sym-

ptom; and the only variety he admits, viz. the *Subcontinued*, he says is not to be classed under either of the divisions of the compound Tertian, as it sometimes belongs to the one and sometimes to the other, though more frequently to the Coagulative.

He does not allude to the benignant Continued fever, made so by subintransient paroxysms, but of that form which, in acquiring continuity, assumes a pernicious character, the continuity still effected by subintransient paroxysms, which is the only way in his opinion that it can occur. In the benignant form (p. 288.) one paroxysm by anticipation comes upon the other before it is entirely over; but, notwithstanding, “*sub ista accidentali ac benigna continuitate, adhuc eadem servatur periodus, idem prope invasionis modus, cum sensibili rigore, horrore aut frigore, eademque solutionis saltem dispositio si non totalis solutio:*” and this, he says, is borne as well as if it were an Intermittent; yields as easily to bark; and arises from the simple Intermittent, becoming double, triple, subintransient, and thus continued.

The pernicious Subcontinued is that form which becomes pernicious through its continuity: “*nullo licet præcipiti stipata symptomate, pluribus tamen aliis gravibus paulatim afficitur accidentibus, quolibet febres acutæ, malignæque solent ut plurimum insigniri; ac propterea et ipsa de Intermitteute sensim in Continuum, acutam ac malignam migrat.*”

It may have the symptoms of the varieties of the compound malignant Tertian; but if it has, they are always inconsiderable, and therefore the continuity being the peculiar characteristic, it gives the

name to this variety. But the passage must be given in Torti's own words. He adds to the sentence just quoted: "Per hoc autem, quod plura et varia sortiatur accidentia, ut continuarum mos est, non fit, quod habere quandoque non possit aliqua etiam ex iis quæ exposuimus in perniciosis supra descriptis, ut lethargum &c. &c., sed ea solet habere in gradu remissione, ut eadem habere solent nonnunquam continuæ ipsæ primariæ, non vero in immani tamque conspicua intensione, ut inter cætera quam maxime superemineant, valeantque idcirco se solis huic feбри, et exitium summe præceps, et peculiarem denominationem tribuere, quemadmodum eandem illi primario tribuit acquisita continuitas. Hæc quam *Subcontinua* nomine lubet appellare, absque aliis signis, ex eâ, quæ paulatim fit, periodorum obscuracione et successive acquisitâ continuitate est cognitu facilis." (p. 290.)

As continuity is the essential characteristic of this variety, and of its pernicious nature, he considers that included under it are all those modifications of fever which authors have referred to the Continued, and especially to the Proportionate, such as the *Horrida*, *Helodes*, *Assodes*, *Hepiala*; and he remarks that Morton treats of it in his chapter "De proteiformi Febris Continentis genio," though under this name others include a fever essentially and primarily Continued, provided it remits.

I have already shown in what way Torti says the change of the intermittent into the subcontinued form takes place, and the symptoms which indicate the transition. By a reference to his classification it will be seen that the *Continent* is his

primary and essential Continued fever; and that the variety now under consideration is a continued form arising out of the intermittent, by subintraant paroxysms, which, to repeat his own words, "*cognitu facilis est, ex eâ (quæ paulatim fit) periodorum obscuratione, et successive acquisitâ continuitate;*" a change, therefore, which fully justifies the assertion of Dr. Armstrong that the types of fever pass and re-pass into each other. The reverse operation is in the Continent becoming Remittent.

I have restricted myself to the use of his language that I might not in any degree pervert his meaning. But it may be asked in what respects does a Continued fever, arising out of an Intermittent, differ in its state of continuity from a Continent fever? I answer, not at all; for at p. 621., in giving the reasons why bark is not to be administered in the continued form, viz. because the ferment *in* the blood prevails over that which is poured into it from *without*, he says, "*Hæc est ratio propter quam, agentes de Subcontinud malignâ, (quæ cum Proportionatâ primo coincidit, mox etiam cum Continente,) fuimus adeo solliciti, quærentes anxie, utrum in illius præcipiti tendentiâ ad febrem essentialiter continuam liceret in ipso principio Corticem exhibere, ne scilicet præterlaberetur occasio præceps et sæpius irrevocabilis.*" This passage therefore completes, if I may so say, the circle; and Torti's authority fully and distinctly justifies the view of Dr. Armstrong, that though Marsh fever often begins as a Continued fever, it sometimes ends as such by passing from the Intermittent through subintraant paroxysms to the Continued.

The cure, therefore, of the *subcontinued malignant Tertian* by bark, is confined to its earlier stage, while it yet retains traces of its intermittent origin; and his remark (p. 454.), that though differing in symptoms, it is always curable by bark, administered “modo celerius, modo lentius, modo parcius, modo liberalius,” is to be taken with this limitation; for at p. 379. he relates the case of a lady, who, after two attacks of a simple Tertian, was seized with a Continued fever, having obscure periodical exacerbations: two parotids appeared, which subsided, and the exacerbations and remissions became more manifest; but in the former, lethargy came on, and in spite of bark the case proved fatal.

At p. 454. he relates the case of a priest, in which we may observe some approximation to the symptoms of the Typhus of this country. He laboured under a double Tertian, of an intermitting type, but with long anticipating paroxysms. In a few days the fever began to assume a continued form, still, however, manifesting some obscure periods by brief rigors and slight coldness of the extremities, to which succeeded immediately a pungent heat, “coma quoddam semper pervigil, urina imminuta, linguæ summa ariditas atque scabrities sine siti. Prosecutus sum curationem, sed irritò successu: exacerbationibus etenim jam fere abolitis quoad signa exteriora, cæterisque omnibus in pejus ruentibus. Jacebat supinus immobiliter brachiis exceptis, ruebat in pedes, respirabat crebro anhelitu, et ore semiaperto, linguam nigram prorsus habebat, scabramque veluti folium Borriginis, quam insuper nequibat exerere, dentesque nigro pariter ac denso

lentore obsitos. Nullum verbum articulate proferebat, submurmurabat tamen assidue, sermone quodam balbutiens minime intelligibili, jactabatque brachia, quasi quidpiam velletprehendere per aerem, sed tandem tremulis unguibus nil aliud quam floccos linteorum carpebat, plicas cum eorum fimbriis modo casu conficiens, modo ignarus iterum explicans." Bark was exhibited, and after a slow convalescence the patient recovered.

At p. 457. is another interesting case of a woman in a double Tertian, "cujus paroxysmum, vix tantillum remissum plurimumque à solutione distantem, excipiebat superveniens alter, adeo ut febris esset indesinenter continua, motum tamen sensibilem servans, intermittentis adinstar. Præmissâ et repetitâ sanguinis missione, quoniam febris ad gradum æqualis continuitatis properabat, taliaque acquirerebat symptomata, qualia febribus malignis competunt, decrevi Corticem temperanter saltem adhibere. Erat autem ægra tunc perpetuo vigil, siticulosa, arescebant fauces et lingua; jactabatur assidue, et non semel deficiebat animo. Præscripto leviter cortice, per duos dies parum profici visum est quoad symptomata, quæ graviora potius fiebant, quatenus aliqua insuper aderat mentis confusio et torpor. Febris tamen ipsa ad majorem aliquam remissionem videbatur interim pertingere, et circa nonam morbi diem coepit sensibilius imminui et perfectam fere intermissionem acquirere; sed interim pone unam aurem una parotis apparuit, et alterâ die pone alteram altera. Intra decimam quartam morbi diem paulatim evanuerunt parotides, et intra 17^m omni modo febris."

With regard to the *Subintrant* form of fever, it is

in its origin distinctly an Intermittent, but the second paroxysm begins before the first is over. If the first is near its termination before the other begins, it is called *communicating*, and still retains the character of a true Intermittent; but otherwise it is the true Subintrant, and then approximates to the *continued proportionate*. Both these varieties are curable by bark; but in speaking of the last variety, Torti says, it yields to bark, if this be exhibited "*priusquam febris novâ metamorphosi, de Proportionatâ in simpliciter Remittentem transierit.*" (p. 612.)

I have thus considered generally all the varieties of Intermittent fever acknowledged by Torti; and it is sufficiently apparent, that there is a gradation from simple Ague up to Continued fever, and that bark, which is a specific for the distinct intermitting form, becomes a doubtful, and in some respects a hazardous remedy in those modifications where the periodical character is lost. The simple Intermittent, then, passes insensibly into Continued fever; and while, in the mean between the two extremes, we meet with a form of fever partaking in some degree of the character of both, we find an exact correspondence in the efficacy of bark, for it almost infallibly cures Ague, and aggravates Continued fever; but in the mean between them it acts favourably, or the reverse, just in proportion as the case leans to the intermitting or the continued character: and if there be a difficulty in deciding as to the nature of the fever, there is an equal embarrassment as to the propriety or impropriety of exhibiting the remedy.

I shall now turn to Continued fever as described by Torti.

The ancients, he remarks (p. 578.), divided all fevers into Simple, Putrid and Pestilential or Malignant. He rejects from his classification the Pestilential and Malignant, because they include the two former, from which the ancients themselves allowed they differed only by having some pernicious quality added to putridity. "*Tota diversitas malignarum ab iisdem non maligis in nulla alia re sita vulgo statueretur antiquitas, nisi in venenata quadam qualitate, putredini in putridis superadditâ.*"

Continued fever was divided by the ancients into Continens, or Synochos :

Proportionata, or Periodica.

Torti does not adopt this arrangement, but divides the Continued into the

Continent and *Remittent* ; considering the Proportionate to be of a nature intermediate between the Intermittent and Continued, arising out of the *Intermittent Subintrant*, and the *Continued Remittent*, partaking of the first in its origin, and of the last in its progress.

The *Continent* is what in this country is considered as Continued fever, that is, it is without exacerbation or remission, as if consisting of one accession, with an equal, an increasing, or a decreasing continuity.

The *Remittent* does not run its course with an equal, an increasing, or decreasing continuity, but undergoes some *obscure* and *irregular* recurrent exacerbations, followed by inconspicuous and *inordinate* remissions.

The *Proportionate*, without losing all the traces of continuity, has *periodical* increments and decrements, of a Quotidian, Tertian, or Quartan charac-

ter, either simple or double, "aut solo etiam retento generis nomine, *Continua* simpliciter nuncupatur," (p. 584.). The Continued Tertian and Quotidian, therefore, rank under this variety; and Torti, under the first or Continued Tertian, includes the *Causus* or *Febris ardens*, *Assodes*, *Helodes*, *Syncopalis minuta*; and under the second or Continued Quotidian, the *Hepiala* and *Syncopalis humorosa*.

The Proportionate, therefore, (p. 614.) has a fixed continuity which does not belong to the Subintransant, and a distinct periodical character which does not belong to the simple Remittent. "Siquidem habet hoc perpetuum, ut cum continuitate non levi, distincta, plus quidem ac minus, habeat periodi indicia, eaque ordine certo, sive quotidie, sive alternis diebus, sive per majora intervalla, et sive cum anticipatione, sive cum postpositione, ut plurimum regulari, recurrentia, ut Intermittentium mos est." As it often assumes the type of a double Tertian, there is an alternate resemblance between the exacerbations on the *odd* days, and a want of resemblance to those which occur on the *even* days, so that the exacerbation is one day greater and the next less, or one day earlier and the next later, and so on alternately.

He gives some subtle directions as to the use of the bark in this variety, which amount in substance to this, that the more it approaches to the Subintransant than to the Remittent, the more safely and effectually the remedy may be applied; but the passage is too instructive to be omitted.

"Si exacerbationes," he says, "sibi invicem respondeant typo periodicarum Intermittentium vero

et proprio, ipsaque exacerbatio non per meram incalcescentiam se prodat, somnolentiam, capitis dolorem, aut gravitatem, vel per quandam pulsus elevationem atque turgentiam sensim obrepentem; sed per motum aliquem adstantibus ipsis sensibilem ac observabilem, nempe vel per frigus aliquod utut breve ac leve extremorum aut nasi; vel per horrorem aut horripilationem aliquam, per unguium livorem, per oscitationem aut pandiculationem, per internam quandam sensationem, auræ alicujus æmulam, uno verbo, per motionem aliquam motibus Intermittentium analogam; in tali casu Cortex, fidenter, cæteris illum coindicantibus, poterit exhiberi: secus vel nonnisi cunctanter si notæ febriles sint potius in lineâ caloris quam frigoris, ut supra, et eo minus, si obscuriores illæ sint, aut irregulariter valde contingant fere in morem simplicis Remittentis." (p. 616.)

The remission also will afford indications as well as the invasion, and in cases which approximate to the simple Remittent, it is equally obscure one day as another. The pulse "non minus tumultuat" after than before the exacerbation; there is still a sensible degree of heat to the touch, no change in the urine, nor sign of laudable diaphoresis; and bark given under these circumstances only makes the fever more decidedly continued, or, to use the language of Torti, "per illius oblationem tollatur motus periodi, non tamen tollitur continuitas, quæ illi viget superstes." (p. 618.)

I have already shown, in the general observations on fever, extracted from Torti, that he considered the *season* in which the Proportionate arose, and

the mode of its *origin*, as circumstances which would aid in determining whether bark was to be given or not, and that the cases of summer were more easily and successfully treated by it than those of winter. With regard to its *origin*, he says (p. 620.) we must distinguish between those cases which begin at once as *Proportionate*, as *Remittent*, or as *Intermittent* fever. Bark is clearly called for in the last form, "quod febris orta Intermittens suum adhuc nativum characterem in radice servet, etiamsi fiat Continua;" and he quotes Sydenham, who in fevers of this kind says, "nulla mihi religio est, Corticem in Continuis hujusmodi sumendum proponere, qui iteratus ad apyrexiam certo ægrum perducet." It will be evident that the effect of bark under these circumstances will be more or less successful as it is given sooner or later after the complete continuity of the fever. Torti distinctly implies this. "Though the periodical character," he says, "may be obscure and confused, yet bark may be given with a greater certainty as to the result in the Continued form, arising out of the Intermittent, than in a fever originally continued, but in its progress manifesting something of periodical returns. If, however, these become distinct, then it merges into a Subintrant, and may be confidently treated by bark;" "sicuti contra, quamvis incœperit Intermittens, eo ipso, quod omnem jam periodi motum amiserit, atque in Continentis omnino, nedum Remittentis, naturam transierit: inutilis solet esse Cortex."

Again, at p. 621., he urges the necessity of watching the moment at which the change of type takes place, "citra quod utilis et ultra inutilis esse

consuevit oblatio Corticis ;” and he quotes Morton to the same effect, who says, “ cum enim eadem ipsa febris brevi temporis spatio genium suum sæpius mutare soleat, medici interest varias metamorphoses animadvertere, ut non temerario et more empiricorum febres omnigenas, vel eandem ipsam in diversis suis stadiis (heu quantum !) mutatam, una methodo absque discrimine tractet *.”

The simple *Remittent*, Torti (p. 612.) considers essentially a Continued fever, and its remission accidental ; or in other words a *spurious continent*. He remarks, that it is very rare in practice to find a Continued fever which always keeps the same tenour, or which always increases or decreases ; but that we may frequently meet with fevers which, although they do not ever fall much below their excitement, still, at uncertain hours for the most part, either in the day or night, the morning, afternoon, or evening, “ alicujus incalescentiæ ut et alicujus nonnunquam refrigerii notas obscure præseferunt.” This, he thinks, does not proceed from the influx of an Intermittent, but rather from the inequality of that

* Morton, *Opera Medica*, Editio ultima, Amstelodami 1796, vol. ii. p. 159.

Torti (p. 607.) notices the difference in nomenclature between himself and Morton. Both, with the Schools, call those fevers which have no remission, “ *Synochos*.” But Morton adds, “ *Simpliciter continuas*,” while Torti adds “ *Continentes*.” Those which remit periodically, Morton calls “ *Continentes*” or “ *Syneches*,” while, with the Schools, Torti calls them “ *Continuas simpliciter*” or “ *Continuas proportionatas*” : thus

Continued Fevers : *Synochos simpliciter continuas* (Morton).
Synochos continentes (Torti).

With periodical Remissions : *Syneches* or *Continentes* (Morton).
Continuas simpliciter or *Proportionatas* (Torti).

of Continued fever. He indulges in some ingenious speculations as to the cause, and ends by saying, that as it arises "à fermento viribus Corticis inextinguibili," so the fever itself "virtuti Corticis refractaria censenda est, ut usus me docuit."

The *Continent* fever of Torti is, as I have before remarked, what is considered a Continued fever in this country. He divides it into the *Essential*, which arises from an inherent depravity of the fluids, and is unaccompanied by any determinate local affection; and into the *Symptomatic*, which appears to arise from a local affection, as inflammation or Erysipelas; though Platerus and others, he says, (p. 586.) are disposed to consider these fevers as Essential, and the inflammation or the Erysipelas, &c., as arising out of the fever, which, instead of being symptomatic, is rather compound, that is, accompanied by some peculiar affection excited by the fever in some part of the body.

His second chapter of the Fifth Book is expressly devoted to prove that bark is useless in the Continent fever; and he lays it down "tamquam theorema inconcussum in praxi, quod energia Corticis *unice* sese exerit adversus fermentum quod per intervalla sanguini affunditur." He tried it (p. 592.) in the Continent, in small divided doses, but found no good effect from it; and he adds, "quotiescumque morbus Cortice curatus, suum de more stadium absolvit, ut contigit tunc, profecto illius curationem Cortici non magis tribuam quam cæteris remediis, aut ipsi naturæ. Et ideo in hujusmodi febribus, inutilem saltem atque frustraneam crediderim, ingenue loquendo, oblationem Corticis,

nisi adhibitâ industriâ aliquâ, mihi hucusque ignotâ, sensibiliores effectus datum sit intueri. Neque hoc (ut nihil subdiceam) plane intentatum ipse reliqui: sed nec rem acu tetigisse mihi sum visus, neque tuta tantummodo minimeque suspecta admittenti, ulla amplius mihi superest ultro experiundi cupiditas."

Are we to conclude that in the practice of Dr. Clark * of Newcastle, the cure of his fevers was no more justly attributable to bark "quàm cæteris remediis aut ipsi naturæ"? It is very evident that his experience is opposed to Torti, who expressly says that the Continent fever (p. 603.) "per decrementum insensile solvi consuescat," which is reconcilable to our ideas of recovery, but not of cure. The general disuse of bark in the Continued fevers of this country would incline to the belief that in Dr. Clark's hands it was an inert remedy, and that the principles so elaborately and distinctly laid down by Torti for its use are sound.

I shall now turn to the epidemics of Lancisi; but I cannot refrain from the remark, that the views of Dr. Armstrong are generally upheld and confirmed by the experience and observations of Torti; and that few impartial minds can doubt, from the mass of evidence I have compiled from the classic work of this learned Italian, that Marsh fever passes and repasses from one type to another, and that there is nothing inconsistent in the idea of a Continued fever arising from the same causes as an Intermittent. As the continued form at Modena was more especially the winter type of fever, and yet in

* Clark, Diseases in Long Voyages, &c., 3rd edition, London 1809, p. 173.

Torti's estimation essentially the same disease as that which in summer was periodical in its accessions, so in countries of a low mean annual temperature, the general character of fever may be of the continued form, and yet not in nature different from that which is generally intermitting and remitting in warm climates. I would appeal to the evidence which Torti's work affords of the marked contrasts between the fevers of Italy and the fevers of this country, as they are described by our English authorities. Why in the one, and throughout the Mediterranean, is periodical fever so universal, and in the other Continued fever? Is it that the sources of Marsh fever are common in the South, and almost unknown in the North; or is it that temperature, by its effect on the cause and on the human body, determines the mode in which the disease appears? I believe, that trace it throughout the world, it will be found everywhere obedient to temperature, following the apparent law which influences it in the different latitudes of America.

CHAPTER VII.

EPIDEMICS OF LANCISI.

LANCISI *, in his work *De Noxiis Paludum Effluviis*, has entered very elaborately into the subject of malaria as the cause of fever, and has given the hi-

* *De Noxiis Paludum Effluviis*; auctore J. Maria Lancisio; Romæ 1717, 4to.

story of five epidemics, which he refers to local contaminations of atmosphere.

I shall quote a few of his observations on the imputed source of Marsh fever, and then briefly describe his Epidemics.

It is not only to the natural marsh, shallow ponds or lakes, sluggish rivers, and the level sea-beach, that he attributes the origin of malaria, but to ditches, drains, sewers, and every hollow containing foul water and offensive mud; in fact, to all collections of filth.

"Hinc," he says (p. 3.), "*fossas, cloacas, lacus, scrobes, aliosque terræ sinus, modo corruptos latices imbiberint, maleque olens cœnum contineant; ad paludum genus referri volumus:*" and again, (p. 12.) he contends that the vicinity of marshes is not the sole cause of the deterioration of the air, for we cannot deny (among other things) "*putrescentis frumenti puteos, aggesta purgamenta, sordesque domorum ac præcipue culinarum, cœlum ita afficere posse, ut morbidum fiat, pestiferumque. Quæ sane, etiam nondum vestigatis rationibus ostendere discutibus, opportunum duximus, quia prius aliquid num sit, quam cur sit, cognoscendum est.*"

He thinks that marshes in which there is a mixture of waters are most insalubrious, as in the Roman and Florentine territory, where hot sulphureous and acidulous waters give rise to more violent diseases than simple fresh-water marshes. The unmixed salt-water marsh is healthy because the salt prevents putrefaction, but it is the reverse if fresh-water flows into it. "*Infamis est ær, ubi prope litus depressior sit locus, inque illum maris undæ influant per canalem, et in eum etiam locum a*

proximis collibus pluvie cum sordibus convenient." (p. 21.) Water itself is innoxious, and it is to the foreign matter in it that its deleterious properties are owing; and to the corruption of the vegetable and animal ingredients in it, heat and the stagnation of the fluid are essential. This explains, in his opinion, the different conclusions to which authors have come as to the effect of the water-rotting of flax and hemp. Benedictus and Riverius had no hesitation in ascribing pestilential fevers, and even the Plague to it. (p. 33.) But Lancisi contends, the effect will depend on the maceration taking place in running or in stagnant water. Pareira shows, that no sickness follows the soaking of flax in France and some parts of Spain, because it is done in streams. At Civita Vecchia the inhabitants were destroyed because it was done in stagnant ditches near the city, while no bad consequence followed the maceration in the river.

Those who live on mountains, in situations exposed to the north, are not affected by marshes, because their effluvia are inconsiderable both in amount and malignity, and are easily dispersed by the winds; but on plains the inhabitants are sickly, where marshes lie to the south, because the emanations are more copious, more noxious, and not dissipated by dry winds. Even towns on considerable elevations are liable to be affected by a marsh at the south or south-west. Lancisi gives a very memorable instance of this in the town of Gandolpho, which, notwithstanding its elevation, was rendered sickly by the exhalations from the lake Turnus, lying below it to the south-west. The lake was dried up

by orders of Pope Paul V. in 1611, and an inscription in front of the pontifical palace records the service which he thus rendered to the place. (p. 24.)

PAULUS V. PONT. MAX.
 OPPIDUM AQUARUM FENURIA
 ET NOXIA E TURNI LACU ASPIRATIONE
 INFREQUENTIVS
 AQUA TERTIO AB HINC MILLARIO
 DERIVATA ET LACU EXSICCATO
 SALUBRIUS LETIVSQUE REDDIDIT
 AN. DOM. MDCXI. PONTIF. SUI VII.

The marsh effluvium, he says, (p. 8.) elevated by the sun's rays, and borne by the winds, affect us by impeding perspiration, &c.; and because "quod maxime advertendum, multa ingerunt quæ sanguini, Immo etiam solidis partibus peculiaria inferunt detrimenta." He does not think it always the same, either as to quality or effect, in different seasons and places.

The order and progression of disease, from July to the winter solstice, are as follows. (p. 42.) In the beginning of summer the fevers are generally mild Tertians; as the heat increases they become continued and fatal; about the autumnal equinox they are pestilential, if clouds, rain, mists and southerly winds prevail; and towards the winter solstice they remit in violence, and pass into chronic affections, those who have recovered often being affected with obstruction of the viscera and lingering Quartans.

But the malaria rises sometimes before July, and prevails beyond the winter solstice; for if the spring is warm and showery, with southerly winds, it begins to ascend before the vernal solstice; and if

northerly winds and copious rains have not set in by the winter solstice to dissipate the effluvia and purify the atmosphere, a marshy situation may be dreaded even after the 1st of January, for the germs of an epidemic will often revive with increased vigour. (p. 46.)

Of the causes productive of malaria, the primary one is the increased power of the sun's rays; and the secondary one, the fermentation of the marsh waters, and winds. The efficacy of heat is shown by marshes being innocuous in winter, insalubrious in spring; and what contributes to the exhalations from them in hot weather, is the lightness and elasticity of the air, which more freely admits of their introduction into it.

But it often happens that these exhalations, even in August, do not affect the inhabitants at all, or but very slightly, unless southerly or south-easterly winds blow from the marsh, or mists and fogs fall at night. Winds operate by wafting the emanations of a marsh to the inhabitants in its vicinity; and the healthiest wind will sometimes do this, while a southerly one will keep the air pure, as in the Leonine district at Rome, though in other respects it is naturally injurious by increasing the heat, and by its possessing a fermentative quality. Fogs and mists operate through the noxious particles they contain, which, rising from a marshy soil into the upper regions of the atmosphere, are precipitated again in a condensed form towards the earth; and hence the effluvia of a marsh is most injurious to those who sleep in its vicinity at night, when it is naturally most deleterious in itself,

and the body most prone to absorption, as the motion of the blood is slower and the secretions generally less active during sleep. (pp. 47-49, 77.)

Hoffman, he remarks, has with great diligence collected the testimony of many writers in Egypt, Greece and Germany, by which, "*sicco solo aërem salubrem, à palustri verò, et cœnoso inclementem, immo etiam pestilentem extitisse demonstrat.*"

Lancisi alludes to the evidence of the truth of this afforded by the fate of many of the illustrious and populous cities of Italy, "*quæ à solis paludibus vastatæ sunt,*" so that "*ipsi oculis intuemur, quanta sit stagnantium aquarum pernicies.*" (p. 9.) He instances the decline of the cities of Aquileja and Brundusium; the former, "*civium quondam multitudine florentissima, vix nostro ævo reliquias ædium et veteris fortunæ vestigia retinet, nullis aliis armis eversa, quam corruptio ex aquis hærentibus aëre.*" Galatheus, in speaking of the latter, says, "*Quin etiam et urbes fata habent sua; sed civium negligentia Brundusium infamavit, quæ si aquæ suos exitus apertos habuissent, nunquam tale nomen assequuta fuisset.*"

Virgil in Georg. 2. 225. speaks of Acerræ, a city of Campania, having been depopulated by the inundations of the river Clanus:

" et vacuis Clanus non æquus Acerris."

" Or 'where prone Clanus, raging far and wide,
Pours o'er Acerræ's waste its torrent tide." (SOMERBY.)

Lancisi adds, it would be tedious to enumerate the many other examples of similar ruin: and that if any one will take a survey of the coasts and of the interior of Italy, he will find that Lombardy,

Liguria, the greater part of Tuscany, Naples, Calabria, and the eastern portion as far as Apulia, enjoy a healthy atmosphere, for no other reason than that the water flows through these countries in torrents and rapid rivers to the sea, and is prevented by the rocky character of the mountains and of the shores from soaking deep into the earth and forming a moist soil: on the contrary, that a malignant atmosphere throughout the summer and autumn prevails at Pisa, the sea-coast about Sienna, the territory about Rome, especially at Portus, Ostia, Terracina, Fundi, Salerno, the plains of Apulia, &c. &c., from the quantity of water that is made use of in macerating flax and growing rice, or from the natural character of the country admitting it to stagnate in ponds, or, through the negligence of the inhabitants, in marshes. (p. 10.)

Lentilius, physician to the Duke of Wirtemberg, reported to Lancisi a similar local contamination of air connected with the development of fever at Stutgard. That city is surrounded by mountains on all sides, except towards the east, where a plain stretches towards the river, on which, near the walls of the city, there formerly was a pond of several acres. For many years the city was obnoxious to obstinate Intermittents, which were so manifestly endemic that they were known by the name of the Stutgard fevers. About fifteen years after the pond was drained and converted into a pleasant meadow, the fevers became so rare that they appeared only in a few occasional sporadic cases, which were much more easy of cure. "*Apparet inde febres ab effluviis illius stagni putidis extitisse, quæ fiante euro*

ablata civitati invecta fuerunt, eo quod ventus, allissione ad montes facta, quasi re percussus, effluvia dicta longinquius provehere non posset." (p. 11.)

The experience of every age, says Lancisi, has borne testimony to the unhealthiness of marshes, and the Greeks invented fables and the forms of monsters to impress mankind with a salutary dread of their pernicious effects, whence the poetical conceptions of the Hydrus and the Hydra "quorum vocabula ab aquis deducta," and of the Python slain by Apollo, "quòd ipsum à putredine et corruptione nomen accepit." (p. 35.)

Varro (*De Re Rustica*, lib. i. cap. 12.) says, "Advertendum etiam si qua erunt loca palustria, et propter easdem causas, et quod arescunt, crescunt animalia quædam minuta, quæ non possunt oculi consequi, et per aera intus in corpora perveniant, atque efficiunt difficiles morbos."

Columella (*De Re Rustica*, lib. i. cap. 5.) says, "Nec paludem vicinam esse oportet ædificiis, nec junctam militarem viam, quod illa caloribus noxium virus eructat. Tum etiam natricum, serpentiumque pestes hyberna destitutas uligine, cœno et fermentata colluvie venenatas emittit, ex quibus sæpe contrahuntur cæci morbi, quorum causas ne medici quidem perspicere queunt."

Palladius (*De Re Rustica*, lib. i. tit. 7.) says, "Palus omni modo vitanda est, præcipue quæ ab austro vel occidente, et siccari consuevit æstate, propter pestilentiam, vel animalia inimica quæ generat."

Vitruvius (*Architect.*, lib. i. cap. 4.) says, "Vitandum paludum propinquitatem, eo quod, dum auræ matutine cum sole oriente ad ædificium perveniunt,

adjunguntur his ortæ nebulæ, ac spiritus bestiarum palustrium venenatos cum nebula mixtos in habitatorum corpora flatus spargunt, et locum pestilentem efficiunt."

Whatever credence may be given to the idea of living animals contributing to the injurious effects of marsh effluvium, it is sufficiently evident that local contaminations of atmosphere have been considered in all ages to be closely connected with the cause of fever; and if we are justified in supposing that malaria is in its nature analogous to the aerial products of fermentation or putrefaction, we can easily account for the appearance of fever in cities, where, though the marsh may have given place to the crowded habitations of mankind, abundant materials for corrupting the air are to be found.

The epidemic at Rome in 1695 prevailed in the Leonine city, in the quarter of the Vatican, and in the neighbourhood of the Neronian meadows. It had a limited range.

No one, he says, who witnessed the calamity and perceived the offensive smell in the sickly part of the city could doubt that the cause of the fever was the stagnant water, "*tum in scrobibus pratorum, tum in magna cloaca, atque in fossa Hadrianæ arcis. Sed quoniam ad colligendos eos latices, tam ubertas pluviarum, quam Tiberis inundatio maxime contulerunt, merito à præcedenti autumno, utpote admodum pluvio atque austrino, originis filum deducendum esse censemus. Raro enim sola, quæ recens ac præsens urget, etiamsi immoderata sit, anni tempestas, populares morbos progignit; sed plerumque per varios noxiarum tempestatum, alia-*

rumque causarum gradus et conversiones, accedente hominum indiligentiâ, ad communes morbos paratur via." (p. 194.)

The autumn of 1694 at Rome was very wet, with a prevalence of southerly winds. The Tiber overflowed twice, and inundated the lower part of the Leonine city, and was so swollen that the ditches could not empty themselves of the filth that had been carried into them.

"Autumnus anni 1694 sæpe magnis imbris, meridionaliumque ventorum flatibus udus exitit; quamobrem tellus jam erat humida, cum Tiberis propter magnam vim aquæ bis auctus est; atque idcirco non solum scrobes, ac fossæ pratorum et Arcis exhauriri non potuerunt, verum, quod maxime aëris insalubritatem inducit, sordes, quæ pluviis prolutæ everruntur, ac dilabuntur, iis in canalibus atque in cloacis subsistere coactæ sunt. Simul etiam per humiliora Leoninæ civitatis loca exundavit, subterraneasque cellas, multosque pauperum puteos hic illic contemeravit." (p. 194.)

In 1695, from May to September, south-easterly and southerly winds prevailed, which "non in vicinas duntaxat ædes, sed etiam usque ad finitimas, adversasque regiones ansam præbuerunt: unde per ea loca immanis orta fuit epidemia febrium, quas medici vocant malignas, perniciosas ac pestilentes nam contagione quoque serpere visæ sunt."

Notwithstanding this imputation of contagion, the facts adduced by Lancisi in favour of a very different origin are sufficiently conclusive. The local range of the epidemic is itself against the idea of any than a local cause; and if it be contend

ed that still contagion might only operate within the range of the vitiated atmosphere, it may be urged that this general cause first gave rise to the epidemic, and that having given origin to it, the continuity of its action under the ordinary exciting causes in a period of general distress, would satisfactorily account for the progression and extension of the disease. Lancisi says, that those who passed from the healthy to the sickly parts of the town were immediately affected by headache, and that the influence of the corrupt air was manifest in the sallow complexion of those who lived in the infected district; and he says (p. 200.), "*Hæc autem claredocent, epidemiam illam à corruptis duntaxat fossarum aquis originem habuisse, cum qui noxios halitus respirarunt, communibus malis plerique omnes correpti sint. E contrario autem ab ea contagione illi servati fuerunt, qui domos incolebant extra hanc effluviolum quasi dixerim sphæram ædificatas.*"

About the middle of May and beginning of June, Tertians, at first simple and benignant, began among the common people living in the suburbs of St. Angelo and other parts near the walls and ditches. It was found that venesection converted them into continued and malignant fevers, but they soon spontaneously began to assume a pernicious and pestilential character, and "*ad Idus usque Octobris ferocius latiusque contagione quoque vagatæ sunt.*" But the symptoms varied with the habit of the individual and the situation in which he lived. "*Illud maxime notandum fuit non eandem per æstum in omnibus promiscue naturam morbi sæviisse, sed secundum varias eo tempore corporum habitus,*

diversosque sæpe domorum situs, plus minusve à fossis dissitos, varias etiam malignarum febrium differentias pravis quidem, sed inter se diversis distinctas signis emersisse. Porro duobus potissimum dissimilibus symptomatum agminibus in aciem tunc temporis prodierunt: aliæ siquidem primis illico diebus intermittentes, sed omnino perniciosæ Tertianæ, æque frequentissimæ, extiterunt: aliæ vero, sed infrequentiores, statim videbantur Continuæ, pestilentem pariter naturam præseferentes." (p. 204.)

As this epidemic was the most fatal of those described by Lancisi, having destroyed 2000 persons in the space of three months, and as it affords a very instructive comment on the varieties of Marsh fever enumerated in the general observations of Torti, I shall enter into a particular detail of it, and take but a brief notice of the other epidemics.

The Tertian fevers were at first, for the most part, simple, rarely double, and always of the intermittent type, assuming a pernicious character by changing into Continued fever on the fifth day, and proving fatal from the seventh to the eleventh, though a few lasted to the fourteenth day, unless they changed to a Dysentery, or to a Chronic fever, which lasted through the autumn and winter.

"Hoc modo pestilentes ejusmodi Tertianæ corripere atque increscere solebant. Primum facies incolentium vicos illos à noxiis effluviis subflava reddebatur. Subinde ab inappetentia cum gravativo capitis dolore, rigor ingens repente corripiebat cum vomitu non solum phlegmatis ac variegatæ bilis, sed plerumque minutissimorum etiam vermium: denique calor et sitis e vestigio urgebat. Sæpe febris

duobus primis paroxysmis effuso sudore ita remittebat, ut infirmi ab omni se penitus malo immunes, ac vindictos putantes secundâ, immo quartâ etiam die non modo surgere, sed interdum in publicum prodire visi fuerint. Verum febris quinta die novo rigore cum ingenti præcordiorum anxietate et jactatione in tantum crescebat, ut naturam continuæ et morem perniciosissimum ostenderet. Lingua erat arida et subobscura, nulla ut plurimum quærela sitis audiebatur, pulsus varii, sæpius parvi, atque inæquales: artus frigidi pusillis convulsivis motibus omnino inconstantes: papulæ in cute lividæ, facies cadaverosa, frequentes lipothymię, venter elatus, tensus, ante delirium dolens, ac frequenter post sextam pallido biliosis et foetidissimis, non raro etiam cruentis liquaminibus solutus. Lumbrici ab ipso morbi principio magna copia per sedem deturbantur. Denique gravi cum sopore, algido sudore, urinis tenuibus factis, parotides erumpebant, ac septimâ vel nonâ die, raro undecima plerosque ægros (priusquam opportuna inventa esset medendi ratio) suffocatos de medio tollebant." (p.205.)

In this general description of the Tertian fever, we find most of the symptoms so graphically and powerfully depicted in the different varieties of Torti, so that, excepting his cardiac form, we might reasonably conclude the others were more or less distinctly exemplified in this solitary epidemic.

The morbid appearances were most striking in the abdomen. "Ingens malorum sedes sub aspectum venit in abdomine, ubi exta pene omnia livida, et potissimum hepar subfusi et bilis cystica atri coloris passim occurrerunt. Intestina autem fere

undique sphacelo tentata continebant foedissima recrementa, vermiumque copiam ; imo vero *circulares hic illic subnigras maculas* exhibebant, quarum in centrīs scissuras quasdam insculptas vidimus. Cæterum præcordia, alioqui mollia et laxa, nigro cruore, quo etiam cerebri vasa diffleebant." (p. 207.)

Lancisi supposes the circular spots in the intestines were owing to the bites and erosions caused by the worms. It is a very important subject of inquiry how far they were in nature analogous to the elliptic patches, considered by Louis as pathognomonic of the *fièvre typhoïde*. It is much to be regretted that Lancisi's report of the morbid appearances is so meagre, especially as the researches of the great French pathologist, whose cautious inductions have already done so much to establish our views of disease on a sure and solid basis, were not extended, from a want of opportunity, to the morbid effects of Intermittents. The few general observations, however, which he makes on the analogy of symptoms between Intermittents and Typhus, would lead to the conclusion, that in an epidemic like that described by Lancisi, appearances like those of Typhus might be found, occasionally at least, in the intestines.

The remedies which Lancisi found most useful were blisters and bark.

Those cases which from the first put on the appearance of a pestilential Continued fever were more rare, and only observed in persons of a higher order ; a fact exactly analogous to what has been remarked in the epidemics of Typhus in this country. (p. 206.)

“Febres vero, quæ initio ideam continuæ pestilentis ostendebant, raræ admodum fuerunt, atque in iis duntaxat civibus spectabantur, qui paulo longius à fossis positi meliori tum victus ratione usi, tum vultus colore præditi, innoxiorum humorum speciem, antequam ægrotarent, exhibuerunt.

“Invasionis autem modus erat cum levi ut plurimum horripilatione, magno gravique capitis dolore, inappetentia, atque minori, quam in Tertianis, ad vomitum propensione. Deinde excitato ingenti æstu dolor capitis augebatur: mox continuâ persistente, solumque pomeridianis horis crudescente feбри, cum pulsu magno potius quam parvo, peticulæ ad cutim rubræ, subinde livescentes erumpebant. Augebatur malum quarta die cum vaniloquio, et sopore, accedentibus primum levibus jectigationibus, subinde apertis convulsivis motibus, cum lingua arida et facie aliquantulum rubra: sanguis e naribus post sextam largâ copiâ non inutiliter multis effluxit. Per alvum interea circa septimum biliosa cum paucioribus quam in Tertiana vermibus erumpebant. Tandem supervenientibus ut plurimum parotidibus, auctoquesopore, multi apoplectico modo decedebant nona vel undecima die, frigidis sudoribus magnâ copiâ ab universo corpore exundantibus.” A few spontaneously recovered by a critical discharge of turbid urine, or “conversione in alium morbum, scilicet in Dysenteriam aut Quartanam,” and many were saved “inventâ curandi ratione.”

This form of the fever was to all appearance the Continued Remittent of Torti, and perhaps the nearest approximation to the ordinary Continued fever of this country that is to be met with in the

latitude of Rome. Many of its symptoms are identical with cases of what is called Typhus in Britain; and the interest attached to it is that it evidently arose from the same cause as the Intermittent Tertiaries, and was only varied in its expression from the difference in the condition of the individuals attacked. Lancisi distinctly admits its origin from the air: "*Communis istius quoque febris causa fuit atmosphæræ miasma.*" (p. 220.) It degenerated in some instances into a Quartan or a Dysentery.

The morbid appearances were more decidedly confined to the brain: "*Cerebrum frequentibus varicibus et plerumque sanguineo sero intra corticis sulcos effuso deprehensum fuit.*" (p. 209.)

Lancisi imagines that the superior condition of the subjects did not favour the generation of worms: "*Quamobrem vulnera et necroses, quemadmodum in vulgaribus, maligne nutritis ægrotantibus intra ipsa intestina non admodum sunt conspecta.*"

The fact of the better classes of society having the disease in an aggravated form, corresponds to what is observed in the Continued fever of this country. Dr. Graham, in his "*Practical Observations on the Glasgow Epidemic of 1817,*" says, it is an acknowledged fact in Britain that the mortality is comparatively greater among the rich than the poor; and he attributes it to the greater inflammatory diathesis in the one than the other. The same diathesis in the better classes at Rome was probably connected with the development of the Continued form of fever in them; and there are facts to justify the opinion of malaria operating more intensely in those not habituated to its effects, as in the ex-

ample of strangers falling exclusively under Yellow fever in warm climates, and in the instance of the solitary case which occurred in the lady who had come from a pure atmosphere into the sickly district of Baltimore, which I have mentioned in vol. i. p. 268.

Lancisi remarks, (p. 24.) "*In designandis insalubritatis gradibus maxime animadvertendus venit hominum habitus et vivendi ratio. Qui prope paludes nascuntur et educantur, etiam in eo insalubri aëre bona utcumque valetudine fruuntur. At vero qui puro è coelo ad palustre se conferunt, eo deterius afficiuntur, quo feliciori assueverint et nutriti fuerint, præsertim si longiores ibidem moras trahentes somno indulerint.*"

In the treatment of the Continued fever, Lancisi, observing benefit to arise from spontaneous epistaxis, made use of local abstractions of blood. As the pulse was strong, the pain and heat of head urgent, he recommended cupping from the lower extremities, or near the occiput, in coma and delirium. He bled also from the jugular vein. Mild laxatives and blisters were serviceable, but bark did not produce the prompt relief that was observable in the Tertian Intermittents. In speaking of its exhibition he says, "*non adeo præsentaneum emolumentum extitit, quemadmodum in Tertianis,*" and "*hujus febrifugi usu nec subito nec tam valide emendari potest,*" which harmonizes with the experience of Torti, and with our conceptions of the nature of Continued fever and the effects of bark. (p. 221.)

As Lancisi devotes a separate chapter to the consideration of the Parotids and the Dysentery which

attended this epidemic, I shall briefly notice them, as we have found the last so frequently mixed up with the Marsh fever of America, and as the former affords an evidence of the liability of the glandular system to be affected in it, constituting in fact a symptom which, though not coming up to our ordinary conceptions of Plague, is frequently met with in the epidemics of that disease, and then not considered as distinct or separable from it.

"Infidum planè morbi genus," he says, (p. 225.) "tumor ille habitus est, quem in glandulis parotidibus vix natum sæpe sæpius adultum repente in febricitantibus videmus. Plerumque in epidemicis febribus evenit, ut tanta sit influentis ad glandulæ locum maligni succi copia, ut non solum infarciat illius vasa, verum etiam ad vicinas partes cogatur divertere: ac propterea abscessus obruat, deinde suffocet, et quam citissime perimat. Ad glandulas pariter, et musculos ossis hyoidis, linguæ et faucium; quas quidem partes lædi, apertis cadaveribus, evidenterprehendimus; unde congeries hæc tumorum partim vasa ex cerebro refluæ, partim laryngem pharyngemque premendo, atque in suis motibus intercludendo, miseros infirmos cum inexplebili siti ocyssime jugulat et interimit."

He admits that most of the cases were fatal, because the parotids were not critical but symptomatic, and came on in the increment of the disease with thin urine and cold sweats. Sometimes life was saved "morbificis humoribus vel conversis rursum ad vias urinæ, eamque crasso sedimento saturantibus, vel transductis ad glandulas intestinalium, unde dysentericus sed criticus fluor exorie-

batur," and he quotes Hippocrates in proof of the same critical diversion. (p. 229.)

He regrets not having tried the method of Riverius, who in an epidemic at Montpellier praises "*sanguinis missionem non semel, sed sæpe etiam, parçè tamen repetitam;*" a mode of practice in fevers which has not sufficiently been attended to in those cases which will not admit of free depletion, and which are intractable under the purgative and counterirritating plan. Lancisi adds, "*Candide tamen fatemur, in Continuis potissimum febribus à nobis incertam à phlebotomia spem certæ desperationi fore anteponendam.*" (p. 231.)

Dysentery, he remarks, sometimes constitutes a peculiar disease of the intestines, and at others depends on the metastasis of a previous disease. It appeared under both forms in the epidemic at Rome. He referred the primary form to the bites of worms, and this was the more frequent of the two, and the most fatal. He describes it as an "*exesio internæ tunicæ et glandularum intestinalium, per quas ichores, mucus, sanguis, non raro etiam purulenta et puriformia cum dolore egeruntur;*" and adds, "*primum exesio ista crebro per morbi augmentum à vermium morsibus excitabatur; quo certe in casu (qui frequentissimus erat) semper Dysenteria mortale malum et signum habitum est.*"

The other form, "*quæ per translationem febrilis causæ à sanguine ac visceribus ad intestina producitur, per id temporis observata est;*" and he adds, "*aliquos ab imminente fato per Dysenteriam, evanescentibus sensim comate ac parotidibus, fuisse servatos.*" (p. 233.)

It may be reasonably asked, on the supposition of Dysentery being one of the forms of Marsh fever, which its constant coincidence with that disease is apt to suggest to the mind, why, as its late super-vention to the fever checks, as it were critically, the more formidable symptoms, its early occurrence as a single and uncombined disorder should not prevent their appearance altogether? The concentration of morbid action on the large bowels may be supposed in the one case to act as a derivative from all other parts, and its early development to controul the diffusion of the morbid action in the other. On this view Dysentery would legitimately rank as one of the expressions of Marsh fever, and not stand even as an anomaly among its many varieties, if Cholera, which is so exquisitely induced by the operations of malaria, according to the observations of Torti and other authorities, were to be considered in its epidemic prevalence an example of an analogous exception to the usual course and symptoms of fever.

It is not necessary to follow Lancisi in his observations on the worms which were voided in this epidemic. It is evident that he attributed more to them than will be admitted at the present time. The epidemic at Rome, as usual, was first checked by the rains which fell in October, and the northerly winds which followed upon them contributed to purify the atmosphere. By the winter, all traces of active disease had died away. The usual chronic disorders alone remained, which Lancisi, in his letter to Traversarius, (p. 363.) says affected those who lived near the marshes. They were spurious Ter-

tians, Quartans and obstinate Dysenteries, which
 “sola cœli mutatio celerius omni arte profligavit;
 unde edocti sumus, *cœlum fugere, quod fecit malum.*”
 (p. 236.)

The second epidemic of Lancisi is that which prevailed at Orvieto in Tuscany in 1705, and several preceding years, which he ascribes to the stagnant pools that had been made for the maceration of flax and hemp. I must refer to his description of the situation of the town and its vicinity. He is very explicit as to the cause of its unhealthiness, and attributes the change which had taken place to the covetousness of the inhabitants, in making pits for the maceration of hemp especially, in a plain near the town, into which the water of the river was allowed to flow.

In speaking upon this subject, (p. 242.) he says,
 “In suburbano fundo cis fluvium et prope urbem
 foveas majori sensim numero excavare, inque eas,
 derivatâ ex flumine aquâ, cannabem ad putrescendum
 relinquere cœperunt. Etenim quum superi-
 oribus annis trans fluvium, longius ab urbe, ejusmodi
 scrobes pararentur, certis quibusdam locis, atque
 interjectis plerumque arboribus, vel nulla, vel cele-
 rius dissipanda maligna effluvia ad urbem poterant
 pervenire; postea vero primum villicorum mox
 etiam dominorum avaritiâ eo ventum fuit, ut juxta
 urbis radices, multitudo fossarum ad hunc usum
 effoderentur: hinc noxii vapores, nulla ex parte re-
 fracti, intra eam urbis regionem deferrentur, quæ
 exapiendis halitibus pronior et vicinior erat.”

To these causes he adds the filthy state of the town itself, in which pernicious fevers, commonly

denominated verminous, prevailed from August to October, and destroyed annually 600 lives.

These fevers were Intermittent and Continued : “*licet pro peculiari idiosyncrasia (ut fere contingit) diversæ plerumque indolis nascerentur.*”

The Intermittents, “*Tertianarum more, vel quotidie vel alternis solum diebus cum frigoris horrore invadebant, simulque copiosissimo sudore minimæ dubiam primis diebus intermissionem mentiebantur: postea circa septimum in Continuas versæ, mortis periculum intentabant. Hasce autem ab initio biliosi vomitus, vel alvi resolutio, capitis et lumborum dolores, cardialgiæ, hypochondriorum contentio, et quandoque tormina comitabantur. Deinde, tametsi eundem ab exortu tenorem pene servarent, leniori tamen calore augebantur, et pauco aut nullo sudore declinabant, tantamque spiritibus perniciem afferre sneverant, ut quinto aut septimo die, hoc est tertio vel quarto paroxysmo, præcedenti nondum expleto, ægri omnino algidi evaderent: febris in Lypyræ naturam transeuntibus.*” (p. 244.)

Of the Continued fevers, a few remitted daily; “*reliquæ (quæ omnium periculosissimæ) alternis diebus recrudescebant; iisdem porro præludebat rigor, quem magni æstus, jactationes, horrendæ lipothymia, sitis, linguæ ariditas, deliria, immanesque vigilie excipiebant: vigilie tamen minoris erant periculi, quàm vertigines et soporosi affectus, qui ad apoplexias vel convulsiones iter brevissime aperiebant.*”

Bleeding was found serviceable in men, and women who were not pregnant. But there were more formidable cases which would not admit of it. “*Ex*

iisdem autem febribus, quæ insolitam inquietem, cordis oppressionem, sitim inexplabilem, deliria, atque artuum dolores, modo certos, modo incertos, tandemque horrificam nervorum convulsionem, vel soporem afferebant, ad exitium præ cæteris prope-
rabant: tametsi illas comitarentur (quoniam omni-
no symptomaticæ) biliosæ dejectiones; urinæ vero
nunc claræ, nunc turbidæ; pulsus nunquam non
debilis et inæqualis; sudores sæpe sæpius frigidi et
graveolentes; immo vero livida exanthemata, et
vibices, nec secus parotides, quibus ægri jugulaban-
tur, erumpebant." (p. 246.)

This description of pestilential fever, so distinct-
ly referred by Lancisi to local causes, which at
least in his estimation were equivalent to its pro-
duction, is analogous in every respect to other epi-
demics which are attributed by a host of authorities
to contagion. I would wish those who insist so
exclusively on the absolute necessity of foreign
contagion in the generation of Plague, to compare
many of Diemerbroeck's cases of the Plague at
Nimiguen with this epidemic at Orvieto. They
will find it difficult to draw a distinction between
the two. The inquietude, particularly the oppres-
sion about the heart, the weak unequal pulse, the
livid exanthemata, vibices and parotids are identical
with many reported cases of Plague; and if it be
urged that such cases do not justify the appellation,
that the inguinal bubo and the carbuncle are essen-
tial to that disease, how are we to escape from the
embarrassment arising from the fact, that these local
symptoms do not in reality constitute the danger
of Plague, which arises from a fever, more or less

perfectly developed, analogous in its character to that described above by Lancisi? It is impossible, in my opinion, to separate with any pretensions to consistency the milder from the more severe forms of fever in any one epidemic; and though conventionally a particular set of symptoms may be selected by the nosologist to represent his own arbitrary conceptions of any particular disease, we never find that an appeal to the actual phænomena of disease will justify the limits so abstractly put upon them.

Lancisi has some pertinent observations on this subject, bearing on the variable effects of individual predisposition in fever. To explain the various modifications which appeared in the epidemic at Orvieto, he says, "It should be recollected that the body may retain in particular parts such a collection of humours that in any one epidemic it may be seized with a continued, an intermittent, a malignant, or a pestiferous fever, and that the aphorism of Hippocrates should be remembered, viz. '*Morbos in iis corporis partibus statui atque firmari, quæ antea plus minus laboraverint.*' If, therefore, persons in an epidemic, sickening from one and the same external cause, are not affected by one and the same fever, it must be attributed to the different temperaments of their bodies, to the quantity of the humours, and to the preceding affections of their viscera. Some may have this predisposition in the abdomen, in the blood itself, or in the brain. In those who have formerly laboured under affections of the hypochondria, the marsh miasm will produce pernicious Tertians; but those who have had any fault in the blood, or who have been plethoric, or

who, from whatever cause, have been troubled in the head, will be seized with an acute Continued fever, attended by all the more formidable nervous symptoms, as watchfulness, convulsions, sopor." (p. 247.)

I quote this passage merely as a proof that Lancisi was disposed to attribute a variety of effect in fever to one remote cause operating on different predispositions, an opinion, with regard to accidental local symptoms, which Dr. Armstrong entertained in all specific fevers.

The epidemic at Balneoregium, or Bagnarea, in Tuscany, in 1707, was owing to the fall or sliding of a hill side, damming up a river at its foot, and occasioning inundations and the exposure of the subjacent soil to the action of the sun's rays. An account of this accident was sent to Lancisi by the Bishop of the place. In May 1707, "*non exigua collis pars ultra rivum cœpit loco cedere, et fluentum versus prolabi. Quum enim argillosâ, irriguâ terrâ constaret, præcipue fontibus scatens, facili negotio corruit, quod propter assiduas ingentesque pluvias toto vere delapsas plus solito subactus, ac molitus, et pondere, moleque auctus esset, tum vel maxime quod ejus basis ad fluvii ripam, exuperanti sæpius aquarum copiâ vehementer fuisset abrasa atque suffosa. Telluris prorutæ latitudo non minor quam bis mille passuum fuit: rivi alveum penitus obstruxit; pleræque vineæ alibi in tumulos excreverunt, alibi in valles, magnosque hiatus depressæ, discissæque fuerunt. In quæ subinde infera loca eadem aquæ intercepto per rivum cursu, quinimo aliæ etiam sulphuræ ex ipsomet solo ab apertis hic illic venis erumpentes exundarunt: variisque in*

locis collectæ complura stagna et lacunas effecerunt: Putidis vaporibus infecto aere totus ille tractus pessime olere cœpit, atque incolarum color ex vivido ac nitido in flavum et pallidum verti." (p. 273.)

Proper measures having been taken to draw off the water the following winter, no other epidemic occurred for eight years, or from 1708 to 1716, the year antecedent to the publication of Lancisi's work. A solitary case in May 1708 was met with in the person of the Vicar-general, and it was apprehended that this might prove the revival of the sickness of the preceding year. But Lancisi remarks, "Febrem quâ Vicarius generalis correptus est, non quidem epidemiæ prodromum, sed morbi-fici illius duntaxat apparatus effectum fuisse. Nam postea usque ad annum 1716, in quo hæc scribimus, neque ulla aeris labes, ullusque epidemicus morbus eâ in civitate vagatus est." (pp. 313—316).

That part of the city which was directly opposed to the collection of waters first felt the influence of the malaria, while another portion, more remote and more elevated, entirely escaped. "Pars urbis, quæ lacunas nuper collectas respicit, prima sensit morborum vim; unde cœnobium Capuccinorum, cum proprius stagna prospectet, luem aeris statim ab initio excepit. Deinceps cœli labes sensim per reliquam regionem vicatim serpsit, servato tamen more, ut passim fieri solet, scilicet, ut eo gravior incolæ plecterentur, quò magis iidem stagnantibus aquis essent vicini. Altera illius urbis pars, quæ orientem respicit, quoniam longe ab ipsis lacunis distat, elatoque in colle sita est, epidemica affectione non laboravit." (p. 277.)

The circumstantial evidence in favour of the existence and effects of malaria in this epidemic is complete :—The singular accident which led to the inundation of the river, to the formation of stagnant water in hollow places, and to the exposure of the denuded surface of the earth ; the first appearance of sickness in that part of the city which was nearest to the source of exhalation, the gradual exemption of that part which was more remote, and the complete immunity of the most distant portion, situated on an elevation fronting the east, and finally the absence of all epidemic sickness for eight successive years after the draining of the land and the reparation of the damage that had been sustained.

Flaschus, in a letter to Lancisi, describes the fevers. (p. 296.) “ *Ex aquarum stagnatione et corruptione ortam fuisse noxiam cœli labem, quæ febres malignas et contagiosas, mites quidem primum, mox ferocientes produxerit. Ægri vermes per os et alvum deturbabant : accessionibus syncopticis, extremorum frigore, ac linguæ ariditate, papulis livescensibus, delirio, comate, jectigationibus, urinis turbidis divexabantur : multis non diu post initium dysenteriae ac diarrhoeæ malignæ difficillimi exitus superveniebant. Pulsus plerumque valde crebri parvi et inæquales. Crises per sudorem vel narium hæmorrhagiam solæ morbum interdum solvebant : nonnullis maculæ rubræ per totum corpus erumpentes : quibusdam qui diu ægrotaverant, abscessus critici in externa, infernaque aliqua parte fiebant : glandulas quoque post aures multis intumuisse, sed nihil naturam per hæc emunctoria critice deposuisse vidi. Multi bis, terve in recidivas satis periculosas ac sæpe*

lethales incurrebant, imprimis si se ipsos, vel nimis cito aeri exponerent, vel in diæta leve peccatum committerent."

The principal morbid appearances were congestion of the vessels of the brain and effusions between the membranes and into the ventricles. In November, after copious rains and northerly winds, the epidemic ceased.

The fourth epidemic is that of Pesaro, in 1708, a city lying low and watered by several sluggish streams, exposed to the south and south-easterly winds, which, with the negligence of the inhabitants in cleansing the sewers, ditches and water-courses, have in all time rendered it proverbial, from the summer to the autumnal equinox, for an unhealthy atmosphere. Lancisi in proof of this quotes a verse of Catullus (*Carmen ad Juventium*):

"Præterquam iste tuus, moribunda à sede Pisauri,
Hospes, inanratâ pallidior statuâ."

He also inserts an address to the inhabitants from Colle, physician to the Duke of Urbinum, who points out the sources of the fevers which annually prevail at Pesaro. Colle, (p. 323.) in speaking of these endemic fevers, attributable to some common cause, such as air, food, or contagion, says, "Contagium non extat, neque ullus superest dubitationi locus, aer horum morborum est causa communis, qui quidem alteratus et permistus à duabus causis; altera cœlestis, nempe venti australes, qui annis elapsis dominati sunt præter ordinem; altera causa est particularis, majus afferens damnum, magisque essentialis, nempe vapores pravi, qui assidue elevantur à locis aquaticis totius litoris ob Genicam ægre

erumpentem in mare, paludibus &c.” He mentions also that in 1515 the then Duke contributed to the salubrity of the city by draining the land and improving it.

It might *à priori* be expected that an epidemic occurring in such a situation would prove very fatal; but the reverse was the fact, for out of 3000 cases of fever there were only 100 deaths; and in 1709, the year following, out of 2000 cases only 70 deaths. Is this low rate of mortality, as compared with the epidemic at Rome, to be attributed to the less effect of the epidemic cause, from the inhabitants being habituated to a vitiated atmosphere, and therefore not so susceptible of those strong impressions made by the febrile cause on persons on whom it operates suddenly and rarely? Lancisi, in his reply to Traversarius, expresses his surprise at the result, and says, “Miramur profecto febrem mitius vobiscum egisse quam apud nos aliosque consueverit. Nam plerumque ubi pedem figit, in magnam partem eorum quos corripit, stragem exercet.”

That the explanation of the fact is probably connected with the less susceptibility of the inhabitants to that intensity of action which is observable in vigorous and healthy subjects, and which gives so great a proportionate mortality to their fevers as compared with the poor in all epidemics, both in Italy and this country, may be inferred from an observation of Albertus, who, in speaking of the inhabitants of Pesaro, says that very few attain to the age of 50, or live beyond it.

The epidemic is described by Traversarius in a letter to Lancisi (p. 335). In 1708, from August

to the dog-days, the fever assumed the form of a Synocha, or a mild Tertian, either simple or double; but by the autumnal equinox it put on a pernicious character and prevailed more extensively. "*Febris vel Intermittens vel Continua per subingressum erat. Primo invasionis paroxysmo, cui secundus, et quandoque tertius respondebat, leves rigores et extremorum refrigerationes præludebant; hosque calor non admodum acris cum frequenti validoque pulsu excipiebat: donec quartus gravioribus stipatus symptomatis, prolixiori frigore, summa anxietate, vomitibus succorum felleorum, croceo, vel viridi et quandoque deteriore colore tinctorum; et similibus per alvum dejectionibus, ad choleram humidam prope accedentibus: quibus superatis incommodis, et membris leni calore excalectis pulsus humiles fiebant cum siti clamosa, lingua arida, et aspera, puniceo-nigricantem colorem æmulante; ac lipothymię et cardialgię, non minoris momenti mala ita urgere solebant, ut stertentes, ac pene aphonos redderent miseros, mortique vix non committerent. In progressu vero febris spasmodici manuum pedumque motus, exanthemata livida, et in vigore proportionalium insultuum deliria et comatosi affectus affligebant. Parotidum quoque intumescentię in 9^a, 11^a, 14^a morbi die apparentes, ægrorum vitam in angusta redigebant. In portu vero res erat, si post saphenę vel salvatellę incisionem, ac frictiones, res solventia admoverentur.*"

Though this epidemic was evidently of a milder kind than that at Rome, yet we find it characterized by the same symptoms; and though the local causes which gave origin to it were those I have specified,

and the lower part of the city only was affected, yet Traversarius says of it "*etsi manifestam contagionem redoleret, integras invadendo familias, attamen minus potius quam cladibus perterreret Pisaurenses, cum ex ter millibus sævâ hac lue pollutis vix centum è vitâ decesserint.*"

The winter following was extremely cold, and Pleuro-pneumonia prevailed generally in the neighbourhood of Pesaro. The fever of 1709 was similar to that already described, but in the following year it prevailed to a greater extent than ever, even so late as December. One third of the inhabitants were attacked, though the same proportion of mortality was observed as in the two preceding years, for out of 6000 cases only 200 were fatal.

The last of Lancisi's epidemics is that which prevailed in 1709 at Ferenti and Frasilone in the Campagna di Roma, and at Anagni, the "*dives Anagnia*" of Virgil. These towns are about five miles apart, situated on hills of moderate elevation facing the south and east, and they vie with each other in the fertility of their plains, which are surrounded by mountains. Their atmosphere is not particularly insalubrious, unless contaminated by the effluvia of the sluggish streams in the summer. One of these mountain torrents, which flows between Ferenti and Frasilone, is in some years swelled to a considerable stream, and from the obstructions it meets with overflows the adjacent plain. There are several springs also, one of which flowing from the base of a rocky hill, forms from the inequality of the soil a large pond at the point of confluence of its rivulets, called by the natives *Scrofino*, the exhalations from which are

so prejudicial, that they have given rise to a proverb, *Quando esce Scrofino, atterza Anagni, e smeza Ferentino*. "When the pond is formed, Anagni is reduced one third, and Ferentino one half." (p. 430.)

In former times there was a magnificent sewer for the drainage of the land, so large that a man could walk erect in it; but through the neglect into which it had fallen, it had become more an impediment than an aid to the object for which it was made; "*quam ob causam*," says Lancisi, "*regio illa, omnino aquis obducta, palustris evasit*."

In the summer of 1709 there was an extensive inundation, to the effects of which the epidemic was ascribed. "*Aquæ mense Julio tantâ mole suis è venis eruperunt, ut universam penè planiciem inundarint. Ex foedissimâ horum laticum desidiâ, ea demum aëris labes emersit, unde perniciosissimæ febres, æstate et autumnio ad hyemis usque initium vagatæ sunt*." (p. 435.)

The epidemic is described by Cocchi, in a letter to Lancisi, as prevailing exclusively in the plains; for though some of the inhabitants of the neighbouring mountains, who had resorted to the low grounds during harvest, had imbibed the seeds of the disease, and sickened at home, there is no mention of any communication of the disease to others who had confined themselves to the hills. "*Vidi*," says Cocchi, (p. 438,) "*septem rusticos montium incolas, qui ad secandam novam cererem in Ferentini agro morati fuerant. Hi æstivâ siti, laboreque extenuati, colore turpissimo infecti, se intus uri, simulque caput in partes quasi dissilire, conqnesti sunt. Circa quartum morbi diem revecti*

ad patrios lares, brevi à tam funesto malo, et nonnulli parotide præcedente, jugulati sunt. Aliqui lethargo stertentes : alii vero adjuncto dysenterico fluxu occubuerunt."

The general character of the epidemic was like those already described. The fever was of the Tertian type. "*Torva occurrit et plusquam ictérica ægrotantium facies. Affligunt vomitus, cardialgia, syncope, mordicatio stomachi, vigilæ, anxietates, deliria, et motus irregulares, comatosus sopor : exanthemata modo purpurea, modo livida. Parotides interdum extuberant, interdum vero exostoses, gangrænosique decubitus patefiunt.*" (p. 437.)

The deaths amounted to about five hundred, but what proportion this bore to the sick is not mentioned. The fatal days were the seventh and eleventh; some lived to the fourteenth. Those who survived beyond this period were not observed to have any crisis. Towards winter, copious rains and northerly winds as usual dissipated the germs of the epidemic.

Lancisi, speaking generally of epidemic Marsh fevers, says, that in the height of their prevalence they are incontrollable, but that they decline with the season which gives them birth; a fact so conformable to all experience, in those climates especially which have a high mean temperature of summer, that it affords in itself, I think, a strong presumptive argument against any other than an exclusive endemic cause of fever.

"Cum furit ex paludibus morbus, initio præsertim ætatis, vix ullis remediis, aut arceri penitus potest, aut reprimi : nè si Æsculapius quidem ipse et

Machaon propulsatores et curatores adessent. Unde ingenuâ, magnoque viro dignâ confessione scriptum nobis reliquit Hippocrates in æstiva quadam constitutione *nihil memorabile suis ægrotantibus profuisse*. Habent enim effluvia ista certum incrementi tempus, quod plerumque tota æstate finitur: cujus decursu affatim irrumpentia in corpora, quæ magis propensa sunt, in fluidas atque in solidas partes debacchantur. Sed cum pluere incipit, æstusque temperatur, tunc palustris humor, *imbribus dilutus*, citius mitescit, et flantibus ventis è septentrione non solum lethiferæ subsident in paludibus exhalationes, sed quæ jam in aërem sublatae fuerant, aliò converti solent ac dissipari." (p. 446.)

Lancisi, in his observations on the treatment of those cases which were attended by parotids in the epidemic at Rome, refers to the method recommended by Riverius in a similar disease at Montpellier, to which I find two brief but very interesting allusions in his *Praxis Medica*. I shall offer such an account of the Montpellier epidemic as these admit of, because the disease itself appears to have been intermediate between the pernicious fevers of Italy and the Plague, as it is ordinarily understood, and because the practice of Riverius appears to be founded in good sense, and deserving the consideration of medical men.

The circumstance that was peculiar in the epidemic was the presence of carbuncles and parotids, and the absence of the inguinal bubo.

At p. 464. lib. 17 *, Riverius, in speaking of the

* Riverii *Praxis Medica*. Ed. nona. Hagæ-comitis, 1658.

error of giving wine in the high fevers of bilious persons; says, "that this was observable in the Spotted fever, which prevailed at Montpellier in 1623, after the siege of the city; which was so malignant, that a third of those affected died, "*et à vera Peste solo bubone distincta fuerit; cum non solum ecchymata, et exanthemata rubra, livida et nigra, sed etiam carbunculi et parotides frequenter apparent.*" He remarks, that in those persons in whom the pulse was nearly natural, the tongue moist with no thirst, wine was exhibited with advantage; that the relief obtained from it indicated its use, and that the fever was neither increased, nor thirst nor dryness of the tongue induced by it. But where the fever was high, with thirst, and the tongue dry, rough and black, wine was entirely inadmissible, and refrigerants and acid drinks substituted. He adds, that wine in the first days of the disease is *never* to be given, but only towards the height of the disease, when the malignant symptoms begin more manifestly to appear.

At page 487, in speaking of the same epidemic, he says, "that he must not pass over in silence a great experiment which he made in it." He had found that all in whom parotids supervened, which they usually did about the ninth or eleventh day, died within forty-eight hours, with delirium, stupor, convulsive motions, and an unequal, frequent, small pulse, preceding or accompanying them. It occurred to him that these glandular tumours were thus fatal, because the part in which they appeared was not capacious enough to admit of all the morbid matter; that consequently a part

was retained within, which oppressed the patient; and that the efforts of nature might be aided by bleeding and purging; especially as Galen had recommended the former in their cure. But the extreme prostration of strength strongly contraindicated this practice; for it was so great, that the patients seemed to be at the very point of death, and did die in a very short time; and Galen himself, in recommending venesection as a cure for parotids, does so on these two conditions: viz. that there is a redundancy of blood, and that the strength will bear it. Both these were wanting in the present case, for blood had been repeatedly drawn from the veins and by cupping. An observation of Celsus occurred to the mind of Riverius, which he thought especially applicable to the circumstances under which he was placed: "*Multa scilicet in præcipiti periculo recte fieri, quæ alias essent omittenda; et satius esse anceps remedium in uno aut altero experiri, quam tot ægros certo exitio relinquere.*"

Riverius was encouraged by the idea that the debility appeared to him to proceed rather from oppression than exhaustion, and that the strength had sunk so suddenly, because Nature could not sustain the load imposed upon her, and there was a hope that it might be removed by lessening it. He felt also that bleeding might be tried in such a way as to disarm it of danger, by drawing only two or three ounces of blood at first by way of experiment; and if it proved advantageous, a larger quantity might be taken afterwards.

This plan he put in practice. In the case of a merchant, in whom a parotid appeared behind the

left ear on the eleventh day of the fever, attended by the state of the pulse and the symptoms above enumerated, he ordered the abstraction of three ounces of blood, which an old and skilful surgeon at first refused to draw, from the fear that the patient would expire under the operation. Riverius saw the patient again in three or four hours, and found the pulse stronger and more equal. He bled again to the extent of six ounces, and the pulse was still much more improved and stronger. The next day he exhibited a purgative, and the patient was rescued from the jaws of death.

"*Omnibus deinceps ægrotantibus,*" says Riverius, "*quibus succrescebant parotides, venæ sectio primum, idque partitis vicibus, et sequenti die purgatio à me præscripta est: sicque omnes quotquot hoc modo tractati sunt fœliciter evaserunt: neque ullus amplius toto illo anno ex parotidibus interiit.*"

I would remark of this epidemic, from whatever cause it may be supposed to have originated, that it holds, so far as the symptoms go, an intermediate rank between the pernicious fevers of Italy, as described by Torti and Lancisi, and the Plague; and that if the former are to be considered as of a totally different nature from Plague, merely because they have not the inguinal bubo and carbuncle, which is essential to that disease, the Montpellier epidemic, which agrees with them in all respects but one, is to be considered distinct from both, because it had the carbuncle, which the fevers of Italy wanted, and had not the bubo which is requisite for Plague,—a disease, however, which in the worst of its epidemics is not unfrequently without one or

both, and in many cases is in no appreciable degree distinct from Marsh fever. It is certainly remarkable, that the fevers of Italy, which appear so clearly to be referrible to malaria, should present so close a resemblance to Plague, if both have a distinct origin; and that Plague should so constantly be preceded by unusual aggravations of endemic fevers, which are attributable solely to a vitiated state of atmosphere; so that the foreign matter of contagion should at all times step in just at the moment when they are declining, and by its ravages put an end to the miseries of pestilence.

The practice of Riverius, in drawing small quantities of blood in the advanced stages of fever, appears to me susceptible of infinite advantage in many cases where large depletions are wholly inadmissible, and where the usual plans of treatment by purgatives and blisters, &c., offer little or no hope of a successful issue. It is, perhaps, more adapted to the fevers of warm climates than to those of this country generally, though there is evidence to show that its utility has been felt in the epidemics of Britain. I would refer to that of Mr. Muir, in the fever at Paisley, 1811. (*Edinburgh Medical and Surgical Journal*, vol. viii. p. 134.)

CHAPTER VIII.

PETECHIAL FEVER OF ITALY.

From Fracastorius, Sarcione and Acerbi.

THE Petechial fevers of Italy will require a deliberate consideration, as they partake of the character

of Typhus, and prevail occasionally so extensively as epidemics, that a comparison between them and the Typhus of Great Britain is essential in an inquiry of this kind, the object of which is to show that the different types of fever are modifications of one disease, probably depending on the modifying influence of mean temperature, of the varying concentration of the remote cause, and the presence of that obscure state of atmosphere, which has been resorted to by the most profound observers to explain the occasional aggravation and diffusion of fever.

It is evident that the modern Italians consider it identical with the Typhus of Britain, and perhaps uniformly ascribe its origin and diffusion to contagion. I refer those who are curious as to the history of the disease, to the second chapter of Acerbi's work *. I shall content myself with offering proofs that in Italy it is the aggravation of Marsh fever, and distinctly arising out of the periodical type; a mode of development which harmonizes with what I have advanced of the influence of high temperature, and with the agency of malaria.

Fracastorius † has described it as it appeared in Italy in 1505 and 1528, and speaks of it as before unknown there, though familiar to Italians of an earlier age, as a disease of Cyprus and the neighbouring islands.

“Contagiosa est hæc febris, sed non celeriter, nec

* *Dottrina del Morbo Petecchiale*; F. E. Acerbi. Milano, 1822, p. 132.

† *Fracastorii Opera Omnia*. Venetiis, 1555, p. 119-121 and 138-141.

fomite et ad distans, sed tantum ad tractationem infirmi. Per initia autem quum febres omnes pestilentes placidæ sint et mitēs, tum hæc adeo placide invadit, ut vix admittere medicum ægri velint: mox vero signa malignæ febris aperiebantur; nam, quamquam calor mitis pro naturâ ejusmodi febrium sentiebatur, interne tamen perturbatio quædam percipiebatur, tum et fractio in toto corpore, lassitudoque more fatigati; decubitus erat supinus, caput gravescebat, sensus hebetes erant, et mens magnâ ex parte post quartum aut septimum non constabat; oculi rubescebant; verba multa dicebantur; pulsus rarus et humilis; excrementa foetentia; circa quartum et septimum in brachiis, dorso et pectore, maculæ rubentes, sæpe et puniceæ erumpebant puncturis pulicum similes; sitis aut nulla aut parva aderat, sordescibat tamen lingua; somnolentia quibusdam aderat, quibusdam et vigiliæ, interdum in eodem utrumque per vices. Status aliis ad septimum, aliis ad quartum decimum, aliis et ultra: urina quibusdam detinebatur, quod pessimum signum erat. Eâ febre mulieres paucæ, senes paucissimi, Judei fere nulli deperiere; juvenes et pueri multi, et ii quidem nobiles contrario modo ac pestilentes verè consuevere, quæ quum vulgum præcipue capiant, tum hæc febres maxime in nobiles grassari visæ sunt."

This passage proves that the Petechial fever of Italy, from those causes which modify the character of endemic diseases, was not one accidentally introduced by the importation of a new contagion, or why should it make its appearance when the pestilential fevers of the country were absent, or mitigated in character, or should attack the higher

classes, when the latter were prevailing among the lower?

Fracastorius says that much difference of opinion existed as to the causes. His own was that the disease arose from the atmosphere. "*Quoniam autem vagantes erant eæ febres, et multis uno tempore communes, communem quoque causam tum habuisse censendum est, præcipue autem contractam ab aëre; quod satis rationabile apparet, quando anno 1528, præcedente hyeme austrinâ pluviosâ vere quidem multa flumina inundavere, apud nos quidem Athesis (Adige) et Padus (Po), apud alios alia: fuere pariter et caligines quædam, quibus arborum germina aruere: quibus de causis et principium his febribus datum credendum est. Nobiles magis quam plebs hac tanguntur labe; contra vero pestilentia magis plebs quam nobiles; quoniam pestilentia potissimum in contagione unius ad alium versatur, minus vitio aëris; hæc autem infectio magis aëris vitio quam transitu unius in alium.*"

Though not true pestilential fevers, they are called, he says, malignant, and often prevail epidemically when the pestilential are absent, and are more common in particular situations. The only difference between the pestilential and malignant is in the degree of the symptoms and the proportionate mortality.

"Febres quæ majorem partem perdunt, *verè pestilentes* dicuntur; quæ vero multos solum, *malignæ* magis dici solent; gradibus solum differunt, et communem quandam naturam habent."

In no part of his second or third book, which treat of fevers and their cure, does he speak of their types; and the character which he gives as common to

pestilential fevers differs but little from that which I have quoted above of the petechial. That he considered this as a milder grade of pestilential or pestiferous fever is apparent from several parts of his work, and he admits that both may arise from the atmosphere. In speaking of the latter he says, the contagion is more prompt in its action and is capable of forming a fomes, "et ad distans sese extendit: in quibusdam bubones aut parotides, aut alii abscessus apparent: maculæ aut nullæ aut rarius in iis visæ, quod mirum est, quum materia harum febrium sit longe subtilior. Fiunt abscessus magis quam maculæ, quoniam furens magis et turgens materia illius est. Aliæ extrinsecus in nos accedunt præcipue ab aëre, qui quum corruptus est, et seminaria statim in nos transfert, tum nihil mortalibus miserabilius potest accidere, verum rarissime contingit, ut ex aëris corruptione pestilentia contingat. Aliæ ab ipso quidem originem trahunt, sed non statim ab eo seminaria recipiunt, sed aut vapores aut consimiles quosdam affectus et dispositiones, à quibus mox febris in nobis primo pestilens fit, et ab uno in alium transmittitur. Aliæ in nobis primo fiunt non vicio aëris, sed aliorum, ut ciborum, et universaliter vitio eorum, quæ pravas putrefactiones facere consuevere."

Fracastorius, therefore, cannot be quoted as the exclusive advocate of contagion, nor does he coincide with the modern advocates of it; for while he contends that Petechial fever, the milder modification, requires contact for the transmission of disease, he admits that the pestilential, with buboes, parotids and other abscesses, may be communicated at a distance.

It will be seen that the Petechial fever of modern times in Italy has distinctly a periodical type. I shall first notice the epidemic at Naples in 1764, described by Sarcone, and afterwards the observations of Acerbi.

The year 1764, which Sarcone* speaks of as memorable at Naples for the diversity and violence of its diseases, was equally remarkable for a most destructive Yellow fever at Cadiz, noticed by Lind. The diseases at Naples had the usual diversity of character in the different seasons. Diarrhœa, Rheumatic fever, Pleurisy and Peripneumony were epidemic from January to April, precursors of the malignant fever which prevailed from April to September. The harvest of 1763 was deficient, and great suffering was the consequence. The starving peasantry crowded to the towns, and were accused of bringing with them the fever which as usual raged among the lower classes, though this inoculation of disease affords no explanation of the winter and spring forms of the epidemic, which corresponded with the summer fever, at least in regard to its types, varying in character from the force of the disease falling on different regions of the body, as I have shown, in the fevers of the Southern States of America, takes place in the different seasons of the year.

Sarcone (vol. i. p. 90.) admits that epidemic diseases are not uncommon at Naples, and that a fever of a periodical subintrant type with a tendency to the chest, or a petechial fever occurs there, though not

* *Istoria ragionata dei Mali in Napoli 1764*, da M. Sarcone. Venezia 1802. 3 vols.

every year. The harvest was bad throughout the kingdom, and the autumn dry with a variable temperature till December. In January, with westerly and southerly winds, a diarrhœa prevailed with fever, occasionally ending in tenesmus and sanguineous dysentery. (p. 96.) In February a Rheumatic fever arose, which is common from the autumnal to the spring equinox, or until the summer, at first with a tendency to attack the chest, and ultimately degenerating into a malignant form. "Questa febbre non ha sempre lo stesso carattere: spesso ha periodo, e periodo doppio, quasi sempre Remittente, e rarissime volte, o non mai Intermittente: altre volte è del genere delle Continue, o putrida: quando nasce in autunno degenera in maligna: quando risorge di primavera è di minore durata, e meno anomala." (p. 109.)

I have considered this periodical type as a proof of malarious origin, in speaking of the fevers of America; and Alibert, who has multiplied the names of pernicious Intermittents much beyond those of Torti, evidently attributes the same cause to his "*rhumatisme*," "*peripneumonique*," and "*pleuritique*" varieties. Sarcone distinctly expresses his conviction that the Pleurisy and Peripneumony which followed upon the Rheumatic fever at Naples in March and April, were the same disease, depending on a metastasis of the disorder from the external to the internal parts; and he shows that the liver and head were occasionally the parts which chiefly suffered. The simple Rheumatic form of the disease was the mildest and most tractable (p. 114.); but at the beginning of March it assumed a more formidable character,

distinctly of a remittent type, and was more epidemic. The paroxysms lasted 18 hours followed by a distinct remission, or 36 hours with an obscure one; and the disease did not terminate before the fourteenth, seventeenth or twenty-first day. It ultimately affected the chest; and Scarcone remarks, "Nulla vi ha di più frequente in medicina, che l'osservare nel corso di un morbo popolare cangiar di aspetto una malattia dominante, ed acquistare un genio tutto opposto a quello, che in prima avea, sia nel ferire luoghi diversi, sia nel comparire con nuovo treno di sintomi, sia nel terminare con opposta giudicazione. La storia dei morbi epidemici è piena de esempj in tal natura, e la malattia reumatica, ne somministra una nuova non equivoca dimostrazione. Questa febbre cominciò a ferire il petto, e a divenire in varia forma micidiale." (p. 142.)

This change from the rheumatic to the pleuritic form took place about the middle of March (p. 172.), and, like the peripneumonic which accompanied it, was of a variable type. The symptoms in no respects differed from the bilious Pleurisy of Rush and of the Southern States of America, and were in some cases fatal within 20 hours or in two or three days. These rapid cases, which Sarcone calls spasmodic Pleurisy, were attended with extreme oppression, copious cold sweats, watery stools, a sunk pulse, difficult respiration, general uneasiness, with a lancinating pain in the chest, painful decubitus, and a cold surface. (p. 202.) Bleeding produced intense anxiety and irremediable prostration; the blood drawn was livid, with a yellowish serum. In a soldier who died within 20 hours the small intestines were marked

with livid petechial spots, "irradiate di macchie come petecchiali livide," and the liver always gorged with blood. (p. 204.)

The Peripneumony was attended with a Continued (p. 216.) or with a Periodical fever, either a double Tertian, or a Remittent type (p. 236.), or an Intermittent (p. 239.), and the Pleurisy appeared under the same forms (p. 211.) Sarcone proves that bark was efficacious in the cure of the periodical varieties (p. 248.); and the duration of these diseases was from March to the middle of April, when the first germs of the epidemic fever which was so fatal from April to September, made their appearance.

I have already quoted Sarcone with reference to the transition of the rheumatic into the pectoral forms of disease. He evidently entertained the same idea of a change of character into the summer epidemic. At p. 262. he says, "Cominciò verso la metà di Aprile a manifestarsi in parte quella insidiosa fatale anomalia, che in progresso divenne la suprema regolatrice della dubbia sorte de quei tanti mali. Non è nuovo, che strada facendo una cagione di morbo popolare, acquisti e genio diverso nel giudicarsi, e scelga nuove parti per offendere, o conservando le antiche sedi nell'atto stesso, o perdendole di mira. Noi vedemmo sinora verificata questa sentenza nelle varie fasi della febbre reumatica: ed i fatti che ora prendiamo ad esaminare, ne somministrano nuovi e decisivi esempj, pruova innegabile di quelle segrete, e tanto a noi poco note rivoluzioni, che nei nostri temperamenti si concepiscono per la forza del tempo, della età dell'anno, della dieta, e di quelle tali cagioni, delle quali sol-

tanto possiamo talvolta ammirare l'effetto, senza poterne penetrare l'interno." (p. 262.)

These observations have not a direct allusion to the epidemic fever, but to the change which the form of the prevailing disease underwent, in passing from a pectoral to an hepatic disease, and afterwards to one implicating the head. (p. 264.) The attack was at first with fever and an affection of the chest, but in the third or fourth day a pain was felt in the region of the liver; and in a fatal case in which there had been great anxiety, fetid stools, scanty urine, meteorismus and hiccough, the lungs, diaphragm and liver were inflamed, and the intestines marked with livid spots. These cases were attended with petechiæ, yellowness of the skin and eyes, vomiting, delirium, watchfulness or lethargy, and were fatal on the ninth, eleventh, or thirteenth day (p. 270.). Some cases were periodical and Remittent (p. 283.), and Sarcone admits that they formed part of the epidemic which succeeded. "Questa classe di offesa fu una di quelle, che come osserveremo, formarono il funesto numero di quella varia e troppo composta malattia, cui fummo esposti per molti mesi." (p. 290.) And he adds that his observations of the different phases of the Rheumatic fever, degenerating into Pleurisy, Peripneumony and acute affections of the abdomen, corresponded to those of his associates. (p. 291.)

This succession of diseases, preliminary to the epidemic fever, is highly instructive; and if malaria, with the effects of temperature from winter to spring, be adequate to account for the different forms of disease, as I have imagined it might, in the progress

of fever in the different seasons in those parts of America where it notoriously abounds, I can see no occasion for resorting to the supposition, that contagion, introduced into Naples by the starved peasantry of the provinces, was the cause of the fever that subsequently prevailed, as this may be considered a further modification of disease, arising out of the influence of the seasons in which it raged.

Sarcone gives no name to this epidemic fever, which I shall notice at some length, as my object is to show that, if it be considered analogous to the fever of Fracastorius and to the Typhus of Great Britain, it was of a periodical type, consequently an Intermittent or a Remittent. Acerbi and the modern Italians evidently considered it as Typhus.

Sarcone does not admit that scarcity was the cause of the epidemic (vol. ii. p. 7.); for the greatest distress was felt from January to March, and the fever did not appear till April. The coincidence of famine and pestilence has too generally been looked upon as cause and effect. It is more reasonable to consider both as consequences of some general change in the atmosphere, connected with irregularity of seasons, winds, rain, temperature, &c. It is even doubtful whether want predisposes the body to fever, as the young and vigorous appear more liable to its attacks. Louis could not discover any connexion between misery privation, &c. and the Typhus of Paris; and in the epidemic of 1817 in Great Britain, the occurrence of disease was in many places long subsequent to the pressure of want, and far too irregular in its progress to be explained by any other supposition than local causes.

We have seen that fever of a continued, remittent and intermittent character was epidemic at Naples from January to April; and if the resort of beggars to the city be considered the cause of the subsequent epidemic, we have no explanation of the preceding diseases, except that which, as in other examples, is to be found in the influence of variable temperature, acting upon the seeds of disease, implanted perhaps in the autumn of 1763. Sarcone would seem not to connect the early forms of the general sickness with that which predominated from April to September; for, in arguing against the idea of famine being directly concerned in the production of disease, he says (p. 9.), "I bisogni maggiori e le massime angustie del vitto furono in Gennaro, Febbraro e parte di Marzo: e ciò nonostante la epidemia non si svegliò, che in Aprile: quando così sia, come lo fu, non sa capirsi, come volendosi alla fame attribuire la nascita del male, i corpi avessero potuto reggere alla inedia, ed aspettare la venuta di Aprile per querelarsene con la primavera: nè sa vedersi, come volendosi al pravo vitto riferire la epidemia, *non se ne fosse qualche segno anticipatamente osservato in tre mesi di tempo.*"

That there were signs of an epidemic in these three months, I have offered sufficient proof; and though the character of disease was changed by the heat of spring and summer, and its diffusion widely increased, I cannot imagine that the effect was attributable to the influx of the poor; and that a cause, entirely distinct from that of the winter and spring malady, viz. a contagion *sui generis*, was connected with the summer form of disease. Had no such

influx taken place, it is almost impossible to believe that the city would have escaped an epidemic; or that after such diseases as I have noticed from January to March, the health of the capital would have been suddenly restored in April, May, &c. That the increase of a wretched, destitute population would afford ampler materials for fever to prey upon, and that disease would more widely spread from the contaminated atmosphere, which the crowding together of a filthy and despairing populace would generate, there can be no doubt; but that these were only accessory, and not primary and essential, causes of the epidemic, is proved by the history of every one that has ever existed. Sarcone, in fact, appears to lay more stress on an impurity of atmosphere than contagion. He insists that the epidemic of April was consentaneous with the influx of the peasantry, "*la età della nostra malattia fu coetanea all' epoca della venuta dei miserabili censiosi.*" (p. 10.); and he argues (p. 52.) that hunger, bad food, and filth, were the causes productive of the putrefaction which spread the disease. "*Che la fame sia sufficiente a cagionare altissima putrefazione nei corpi è cosa dimostrata: che il vitto pravo possa guastare gli umori, e cagionare morbi epidemici, è un fatto; che la impulitezza è un mezzo egualmente attivo, e bastante a nudrire e spargere pessimi semi di putredine, e quindi svegliare orribili mali, è una verità.*" &c.; and he compares the filth of mendicity to pools and marshes, in its effect upon the body. (p. 55.) "*Di fatti, i cenci, le lacere impure camicie, la stessa sucida pelle dei miserabili, che vennero ad infelicitarci, furono per noi, ciocchè sono le paludi,*

gli stagni, e le sostanze veramente settiche per quelle genti, che sono in circostanza di soffrirne l'azione."

This I have no disposition to dispute, for there are facts which would seem to establish a connexion in effect between an atmosphere contaminated by animal effluvia and malaria ; but in a city like Naples, there could be no necessity for the importation of filth to account for the generation of disease, nor would it be easy to imagine any great difference of condition between its own mendicants and those of the provinces.

But to leave the inextricable difficulty connected with causes, and to turn to the disease itself *. The epidemic began in April and lasted till September ; raged among the lower classes, attacking the vigorous and sparing the infirm. "Può ben dirsi, che essa nacque in Aprile, che il minuto popolo fu il primo a soffrirla, che i più forti, e i più vigorosi restarono, in preferenza dei più deboli attaccati ; e che negli ospedali, ove la gente era sommanente affollata e stretta, la malattia cominciò a dar segni della sua esistenza, e della sua putrida natura." (p. 58.)

It spread rapidly in all places contaminated by filth and close air. In May it pervaded all classes, and was especially epidemic in June and July. Those medical men who attended the poor suffered more than others ; especially those who were in close attendance upon the hospitals. It was remarked that those who left the city for the country sickened in a few days afterwards. Parturition, the use of pur-

* See vol. ii. p. 1—141.

gatives, a change of food or in the habits of life, excitement, &c., were exciting causes of the disease; and most disorders, during the height of the epidemic, terminated in the reigning disease, except Tertian or Quartan fevers.

The fever was not of one type, had accessions and remissions, some anticipating, others postponing, especially during the first week, but the remissions were frequently lost in the second, and the fever became continuent. “Per quanto riguarda in generale il carattere delle febbri, dee confessarsi, che il male non fu di un solo tipo. Le febbri furono persistenti, che hanno la loro costante *accessione e remissione*. Di queste alcune furono *anticipanti* o *subentranti*: altre erano *posticipanti*. In tutti questi febbricitanti fu osservabile, che la febbre ebbe nella prima settimana periodo, sensibile *accessione* e *manifesta remissione*, più o meno chiara, come il male era più vicino alla sua nascita, e relativamente alla maggiore o minore malizia della classe dei mali, ai quali si riduceva la malattia. In data ragione, che accostavasi la seconda settimana, si oscurava il periodo, divenivano furtive le accessioni, e le remissioni diventavano brevi, incerte, imperfette. Crescevano a segno questi disturbi, che la febbre di ordinario nella seconda settimana perdeva ogni *maschera di remissione*, e diventava *schietta continente*, in cui non si avvertivano, che le sole sensibili *esasperazioni de tertio in tertium*.” (p. 95.).

Sometimes the remissions were so prolonged and distinct, as to approach to intermission or apyrexia. “Alcune volte la remissione della febbre era così lunga, chiara e distinta, che quasi si accostava alla

intermissione, ossia apiresia." (p. 97.) The duration of the paroxysms was twelve, eighteen, or twenty-four hours. Some of the cases of the remittent type passed into the *febris algida* of Torti; the cold stage being intense and irremediable, and death leaving, after a few days struggle, livid traces on the body of the highest degree of putrescency.

The general effects of the epidemic as enumerated by Sarcone (p. 99.) were a fever, for the most part remittent, sometimes continent, with tubercles, gangrene of the sacrum, or of the lower extremities, mania, delirium, lethargy, watchfulness, tremors, difficult deglutition, distressing headache, hæmorrhage, parotida, convulsions, tremors of the tongue, deafness, injected eyes, vomiting, diarrhoea or dysentery, hiccough, meteorismus, yellowness of the skin, petechiæ, sweats, and a fallacious pulse.

That the course of the disease was very different from the ordinary Typhus of this country, though ascribed to similar causes and conditions of life, is apparent from the description of Sarcone. I shall quote a few passages in the original to prove this, as the force of the text would be weakened by my attempts to translate it.

In the first stage of the disease, "Osservossi ancora, che in taluni il fenomeno principale era la leza, e la turbata ragione oscuramente o manifestamente, talora in forma d'idrofobia, talora in modo di frenesia, talora in sembianza di pura maninconia, talora a foggia di delirio. I turbamenti, dei quali parliamo, di ordinario seguivano nella loro *intensione*, quella della febbre, e conseguentemente scovavano ancor essi un certo tipo." (p. 103.)

“ Gli occhi o si turbavano, fuggendo la luce, o si animavano di un lustro minaccioso, o si rendevano smarriti, languidi, abbatutti: la faccia nei più cadeva in sommo cangiamento e tristo abbattimento.”

The respiration was anxious and sighing in some; laborious and painful in those who had attacks in the chest, accompanied by a dry or moist cough. Some were taciturn, or loquacious, or spoke in a confused and indistinct muttering. Deafness occurred occasionally at the commencement of the disease, and increased with it. Most were attacked with vomiting of a frothy acid or bilious matter, or with a distressing nausea; in others the vomiting was violent and accompanied with frequent stools, as in Cholera. Many complained of a heavy oppression or painful distress at the epigastrium; others, in the height of the paroxysms, of anxiety, or, on their decline, of extreme weakness, swooning, or syncope. In some the bowels from the first were more open than natural, “in altri regnava formale diarrea quasi fin dal termine della prima settimana;” in others the bowels were sluggish. “Il colore dell’abito del corpo, e della faccia era inegualmente vivo, o smorto, e lentamente inclinante al giallastro. Il calore era poco sensibile al primo tatto: ma durandosi a toccare una qualche parte del febbricitante, sperimentavasi nella dita una certa mordacità ed un fuoco di putrescenza.” (p. 107.)

Petechiæ sometimes appeared from the commencement of the disease, or by the third or fourth day, but more commonly at the end of the first week. Many were early affected by tremors, palpitations, spasms; others complained of a continued

distress, and a painful oppression in the muscles, or of a wandering or fixed pain in the ribs, abdomen, &c. The decubitus was supine, except in those who had acute affections of the chest or liver, or who were delirious. A general moisture, or slight and partial sweat, was universal, but affording no relief.

The increase of the disease was marked by the precipitous or successive aggravation of the symptoms, and especially by the disappearance of the periodical or remittent types, which were observable during the first week. The fever became continent, or the paroxysms were only indicated by the aggravation of some particular symptom, or by some change in the pulse, "e soprattutto da certe espressioni peggiorie esattamente corrispondenti alla importanza dei giorni giudicatorj della malattia." The pulse underwent very sensible changes. In the first week it was small and oppressed at the commencement of the paroxysms, and became quicker and fuller in the access of fever. "In alcuni, non solo mancò la tanto creduta necessaria celerità del polso; ma anzi il polso o apparve come naturale o fu lentissimo, e tardo a segno, che appena in un minuto primo si numeravano 40 pulsazioni nell'ingresso della febbre, e 45 al più nella oscura remissione: e questa classe di ammalati non andava incontro alla sanità ed alla vita, se non quando si concepiva nel polso quella celerità, che comunemente suole crederci caratteristica della febbre. Fuvvi oltreacciò frequentemente l'asfisia e la intermittenza, ch'è un breve grado di quella." (p. 97.)

In many cases the fever was so mild during the first few days, that doubts were entertained of its

existence. "Questa calma apparente, e che secondo nascondeva la più fiera tempesta, svaniva in data ragione che dalla prima si passava alla seconda settimana. I turbamenti, o rendevansi di più in più manifesti, e considerabili, o ciocchè era sempre di funesto augurio, da uno stato di somma quiete passavasi repente ad uno stato di orribile confusione, appena che giungevasi alla seconda settimana, o in giorno giudicatorio." (p. 98.)

The cerebral affections, if not checked, passed into lethargy, convulsions or epileptic paroxysms, sometimes suddenly fatal; the tongue became dry in the middle, and red at the sides; deglutition was more difficult, the breath offensive, the teeth covered with sordes, the voice tremulous; the vomiting generally ceased, while the diarrhoea increased; the thirst excessive, especially in the height of the paroxysms, when the intellect was clear; swooning and syncope more frequent, the heat more pungent, and the complexion more dingy. Those who were attacked with the *algid* form of fever, lay bathed in a cold sweat, in a state of profound prostration; covered with livid petechiæ or purple spots. The petechiæ in this stage of the disease was one of the most general symptoms in patients under all conditions; but the most formidable affections were the meteorismus, and the suppression of urine. In all there was extreme debility, with parotids, or erysipelas, or gangrene, or abscesses.

In the more advanced stage, as the disease was hastening to a fatal termination, the pulse became inordinate, the animal functions perverted, the odour from the body indescribable; the sweat, stools, urine;

breath, the pus from the sores, the gangrene and parotids so offensive that in ill-ventilated apartments the air was corrupted; the countenance became cadaverous, the extremities cold, the abdomen tumid from a mortal meteorismus, with infrequent or frequent stools, the urine suppressed, or turbid and copious shortly before death, the respiration short or slow and interrupted, the tongue cold, sometimes livid or of a white ash-colour; and, in most strong convulsions, the last expression of living energy. Death occurred sometimes in the first or second, often in the third, and occasionally in the fourth week, not always on the odd days.

Relapses were not infrequent, and the convalescence was often tedious and irregular. "In molti convalescenti svegliavasi nelle ore serotine un certo turbamento nei polsi, che avea tutta la faccia di un oscuro parosismo febbrile, e che cedeva sotto la escrezione o di poco sudore, per lo più particolare, o di qualche secesso sopravveniente dopo poche ore dallo intruso turbamento. In altri molti furono osservabili certi ricorrimenti per lo più regolari, ed in ora data di un parosismo di sorda insania, la quale talvolta era ancor manifesta sino al segno di spingere i convalescenti ad insidiarsi la vita: questo turbamento di ragione durava poche ore, e terminava o col pianto, o con ulcerosa e generale lassitudine, donde cadevasi in lungo sonno. In altri finalmente destavasi, quasi periodicamente, un vago dolore lungo qualche articolazione, e che spesso mentiva il dolore ischiadico." (p. 125.)

These observations show the tendency which the fever, even in its decline, had towards a periodical

form; and Sarcone distinctly says that it sometimes towards the close became Remittent or Intermittent. In speaking, at p. 127, of the duration of the disease, he says that the mildest cases terminated by the ninth or fourteenth day, that those which began violently and rapidly attained their height, were fatal generally in the second week, and sometimes death occurred by the eighth day. On the contrary, those which became aggravated by the end of the second week were not critically solved till the fourth. "Quei che giungevano a tal termine, e febbricitavano ed avevano dolore in qualche parte del corpo, o che erano smagriti, e facili ai sudori particolari, di ordinario finirono di vivere suppurati, o cadevano in idropisia od in marasmo, *ammesso che la loro febbre non acquistasse tipo di Remissione o d'Intermissione.*" (p. 127.)

He says (vol. iii. p. 191.) that the periodical type characterized the whole epidemic. "La durata del parosismo era di dodici o diciotto ore, ed in fine di questo, dopo un sudore inutile, la febbre cadeva in vera remissione, la quale in alcuni era così lunga, chiara e distinta, che quasi si accostava alla intermissione, ossia apyrexia. *Questa classe di febbre fu così frequente, che si può ben dire, che formava il carattere quasi generale della nostra febbre epidemica.*"

The symptoms which Sarcone considered diagnostic, were the state of the tongue, the sweat, the urine, the distressing headache which came on with the disease, or in the height of the first or second paroxysm, and finally the lassitude and prostration of strength, the cerebral disturbance, and the clouded,

suffused and injected state of the eye. The unfavourable symptoms were, the tense hypochondrium, the intermittent pulse, the constant delirium, cold sweat, incessant vomiting, anxiety, disordered respiration, cold breath, livid lips, "*gli occhi nubilati e come polverosi, che abborrivano la luce, ch'erano gravi de lagrime non volute, e spesso non avvertite; e ch'erano ricoperti di livida o rossa irradiazione,*" with delirium, tremors, spasms or lethargy, hiccough, meteorismus, obstinate suppression of urine, gangrene, the petechiæ, at first red, then livid or purple, the fetid, black, colliquative stools, the tendency to syncope, the cold tremulous livid extremities, the distillation of blood from the nose, a copious hæmorrhage, the parotids, and profound debility.

That this epidemic was Typhus, I think there can be no question; but it will be recollected, that it was almost invariably a Remittent, sometimes an Intermittent in its commencement, and that it occasionally resumed these types on its decline. Why is there this difference between the Typhus of Naples and that of Great Britain? I know of no other explanation than is to be found in the probable effect of the difference of mean temperature; as periodical fever is the common type of Italy, and continued the exclusive type at least in Scotland.

The morbid appearances were livid spots observable externally, with gangrene, furunculi, petechiæ, and serous or puriform effusions in the muscular parts. The abdomen was distended by meteorismus, or sunk, and the limbs frequently rigid.

The internal lesions were often disproportionate to the violence of the symptoms, especially in those cases in which the patients died of convulsions within the first week, or in the beginning of the second.

In a more advanced stage the lesions, especially in the abdomen, were decided. The intestines were irradiated with livid discolorations, or with scattered spots like petechiæ, internally lined with a glutinous secretion of an ash or yellowish colour, beneath which the mucous membrane was inflamed or mortified.

“ Erano le intestina per lo più defedate da livide irradiazioni o da sparse macchie a foggia di petecchie. Il loro cavo era presso che costantemente intonacato da un tenace lucido glutine, qualche volta di colore cenerognolo e altre volte flavo, che mentiva una specie di membrana, che distaccata lasciava apparire per lo più scaldate o mortificate le parti sottoposte. Non era egualmente stabile; che le offese fossero maggiori nelle intestina tenui, che nella crasse. Spesso osservansi, che queste ultime erano straordinariamente gonfie, lorde di glutine, e di sucidume vario de quantità e di colore, e graveolente all' estremo. Esse apparivano non egualmente e successivamente tumefatte, ma nel più delle poche sezioni da noi fatte osservossi, che di tratto in tratto esse erano inegualmente gonfie, e come strozzate in certi punti, quasi come rappresentanti la figura di grosse vesciche terminate e chiuse dai loro sfinteri: questo fenomeno era, più che in ogni altra parte frequente nell' intestino colon, il quale trovossi talora come ingorgato e

pieno a ribocco di denso arido faccinme. Rispetto alla verminaglia, questa non fu sempre osservata, nè fu costante nello stesso sito, nella quantità e nel genere." (p. 145.)

In those who laboured under malignant diarrhoea, ending in a fatal dysentery, the large intestines, and sometimes the small, were erysipelatous, the mucous membrane abraded, a bloody serum exuding from the denuded surfaces; "in altri parti pareva sensibilmente cumulata una incrostatura di lucido e denso glutine, sotto di cui d'ordinario le membrane trovavansi arrossite, o viziate da bianche pustolette, a modo di afte, ovvero tinte di livida macchia, o di un vizioso color palido e cenerognolo." The rectum was inflamed and ulcerated in two of these cases, and sometimes the liver was enlarged, gorged with blood, or suppurated.

The mesenteric glands, especially those near the large intestines, were enlarged and diseased. The stomach was smeared with mucus or tinged with bile; the cardia and pylorus erysipelatous, blanched or injected, and of a dull red colour. The œsophagus was similarly affected, sometimes lined with a false membrane and ulcerated. The urinary bladder distended with pale urine, or shrunk and corrugated, with bloody and purulent spots.

The pleuræ were covered with an effusion of coagulable lymph, and contained a turbid or bloody serum. The lungs were inflamed, as in the cases of Peripneumony, sometimes inflated, of an ash or violet colour, injected with blood or pus.

A yellowish serum was effused between the membranes and in the ventricles of the brain, the

pia mater thickened, and the substance of the brain injected. (p. 141—153.)

I have offered sufficient details of this epidemic to admit of its being compared with that of London in 1817, and with the Typhus of Louis. With the last it admits of more points of resemblance than with the first, though it differed in mortality from the disease described by the great French pathologist; for Sarcone says, it was more alarming in appearance than reality. “Il male nella maggior parte era più pieno di spavento che di ruina;” and the insidious cases, he adds, were more formidable than those which set in with violent symptoms.

The epidemic ceased in September; and Sarcone remarks, that in the autumn general health was restored, excepting that a few convalescents suffered from Tertians, which degenerated into Quartan fevers.

This epidemic is noticed by Lind, (*Diseases of Hot Climates*, p. 187.) and he affords a proof of the relief that was found in it by removing the patients to a fresh atmosphere. Sir John Elliot informed him “that the sick who were moved into the hospitals near the sea recovered much quicker than in other places, and few of them died. Other hospitals were fitted up near the sea, and the progress of the contagion was entirely stopped; none of the nurses or attendants were infected, and even when the hospitals became crowded with sick, the number that died in them was inconsiderable in proportion to the number who died in other places.”

Acerbi, in his work on the Petechial fever*,

* *Dottrina del Morbo Petecchiale*. F. E. Acerbi. Milano 1822.

attempts to distinguish it from the slow nervous, and has given the diagnostic signs of these and other associated diseases in a tabular form; the order which they follow with respect to the severity of their symptoms and their mortality being the Sweating Sickness, Plague, Yellow fever, the pernicious Periodical, the Petechial fever, the Slow Nervous, Synochus and Gastric fever. I shall not follow him into the minutiae of his distinctions, which will hold good on paper so long as the speculations of the closet are based upon a partial survey of the phænomena of disease. The Petechial fever, he says, is a Remittent, which not unfrequently resembles a Quotidian, especially at the commencement: “Febbre Remittente, che non di raro simula una Cotidiana, massime in principio di malattia;” a fact which, though true in Italy, is not applicable to Great Britain. The slow nervous, or, as he calls it, the *simple Typhus*, is not contagious; but the Petechial fever he considers as an eruptive contagious disease. “Nel novero dei mali contagiosi acuti che si debbono distinguere dal morbo Petecchiale, non ho compreso la febbre lenta nervosa, che da molti pratici è riputata attaccaticcia. Mia opinione, appoggiata ad osservazioni di fatti, è che essa non sia contagiosa. E con questo mio parere intendo di dire che vi sono delle febbri indicate col nome generico di lente nervose, o Tifi che si vogliano chiamare, molto somiglianti al morbo Petecchiale, le quali essendo più o meno sparse in misura delle cagioni che le producono, non divengono però mai attaccaticce. Queste febbri noi le vediamo talora assalire uno tra mille, il quale

abbia logorato le sue forze vitali, ed altra volta le vediamo manifestarsi in molte persone quasi nello stesso tempo, come accade di osservare negli spedali, nelle prigioni, nelle navi, dove la sporcizia, la miseria, la fame, l'afflizione ed altre cagioni morbose sono spesso comuni a parecchi individui. Nè per questo si propagano esse oltre i confini dei luoghi in cui operano le dette potenze malefiche, ma restano ivi circoscritte, nulla più essendo che malattie endemiche. La mancanza dell'esantema è un altro argomento per distinguere queste febbri dal morbo petecchiale." (p. 42.) This distinction will not hold good in this country; for the jail or ship fever unquestionably is attended by petechiæ, and it may be presumed will manifest occasionally the same symptom in Italy. Acerbi argues against the contagious nature of the simple Typhus, because it is not propagated beyond the influence of the local causes to which it is attributable. This appears conclusive against the doctrine of contagion applied either to the simple Typhus, or to the Petechial fever, for the two diseases are one and the same, and the epidemic prevalence of the last argues an extension of the cause that operated through a limited space in the production of the first: at least the local range of simple Typhus within a vitiated atmosphere is conclusive against any contagious property belonging to it, and the wider diffusion of the Petechial fever argues rather an equal extent of the cause which generated the simple Typhus than a new and distinct one, since the two diseases differ only in name. However plausible the attempts may be to distinguish them,

Acerbi acknowledges that it is more difficult than is usually imagined. He says, "Da quanto ho esposto, apparisce che il morbo Petecchiale non è poi sì facile a riconoscersi ed a distinguersi dalle altre malattie come asserirono alcuni medici. Se ben si osserva, esso non è oscuro solamente perchè abbia sintomi in gran parte comuni ad altri diversi malori, ma ancora in grazia delle sue forme volubili, a cui danno luogo i gradi suoi indefiniti e le complicazioni colle quali si mostra. . . . Il morbo Petecchiale ha un' affinità diretta con alcune, indiretta con altre malattie. Diretta affinità ha colla *febbre Gastrica*, colla *Lenta nervosa*, col *Sinoco*, coi più gravi *Eсанtemi*, colla *Peste*, e colla *febbre Gialla*; indiretta con alcune specie di *Periodiche perniciose*, con alcune *infiammazioni e nevrosi*; ed in fine con qualche specie di *avvelenamento*." (p. 39.)

At p. 205. he gives a list of some of the more memorable epidemics of the Petechial fever, from that of 1505 in Italy, described by Fracastorius, to that of 1817 throughout Italy and a great part of Europe. In this list he includes the epidemic of Montpellier in 1623, described by Riverius; the Plague of London in 1665; the epidemic of Modena in 1692, described by Ramazzini; that of Rome in 1695, by Lancisi; of Plymouth in 1728, by Huxham; that of Naples in 1764, by Sarcone; the Plague of Moscow in 1771, by Mertens; and the jail fever of Winchester in 1780, by Smyth; &c. &c. He adds, "Un fatto notabile è quello, che di mano in mano che la Petecchia andò serpeggiando e divenne più frequente nell' Europa; si diminuì l' influenza della Peste. . . . Voglio anch' io

attribuire questa diminuzione di dominio della Peste bubbonica nell' Europa in parte alle sagge istituzioni di polizia medica; ma poichè il semenzajo di quel contagio si era già sparso in tutta l' Europa ed aveva ripullulato più volte da' suoi germi, sembra che qualche altra circostanza, oltre delle leggi sanitarie, abbia influito a rendere meno operoso nei corpi umani il fomite presso di noi esistente della Peste medesima. Qui mi si presenta di nuovo l' idea, che il contagio petecchiale potrebbe consistere nello stesso fomite della Peste d'Oriente, che coll' andare del tempo e col cangiare delle circostanze si fosse alterato in modo ne' paesi Europei da produrre una malattia di forme e di grado diversa della Peste per alcuni riguardi, ma pur identica colla Peste medesima nella sua entità." (p. 207—209.)

This opinion of Acerbi that the Petechial fever of Italy, which is a Remittent, simulating a Quotidian in its commencement, and the Typhus of Great Britain, which is a Continued fever, proceed from the fomes of the Plague of the 17th century, and are the same disease, modified in its character *from a modified contagion*, requires no comment. I wish merely to repeat that the Petechial fever of Italy is periodical in its type. This is evident from the report of Lancisi, Fracastorius, Sarcone and Acerbi. The work of Omodei on the epidemic of 1817 I have not been able to procure. I know of no probable explanation of the different type between the Italian and the British fevers than that derived from the influence of mean temperature, and I suspect it would be found that when Typhus is generally

epidemic in this country, its modification under an Intermittent or Remittent form is rife in Italy and other parts of Europe. Batt describes a Petechial fever at Genoa in 1800, a year in which Typhus was unusually rife in this country; and the year 1817 was remarkable for the general prevalence of aggravated Remittents along the coasts of the Mediterranean and in Italy, and of Typhus throughout Great Britain.

CHAPTER IX.

FEVERS OF MALTA AND THE IONIAN ISLANDS.

IN Dr. Hennen's * Medical Topography of the Mediterranean we have a general statement of facts, which enables us to judge of the character of the fevers of Malta and the Ionian Islands, from latitude $35^{\circ} 54'$ to $39^{\circ} 36'$. I shall avail myself of the observations which this work affords, and afterwards of the celebrated work of Cleghorn on the Diseases of Minorca, to show that, within the latitudes specified, the common form of fever is that of the periodical type, at least of all those fevers which are referable to malaria; for a Continued fever, arising from common disturbing causes, under the influence of a high temperature, is met with in summer, and apparently forms the largest class of febrile diseases in Malta.

* Sketches of the Medical Topography of the Mediterranean, by John Hennen, M.D. London 1830.

It is very easy to account for the existence of fever, on the supposition that it proceeds from exhalations of the moist or drying surface of the earth, in such situations as the rich alluvial lands lying in the course of the large rivers of America, or those pointed out in the epidemics of Lancisi; but, on a first view, we are perhaps tempted to doubt of these exhalations being concerned in the generation of fever, when in an island so dry and rocky, and so destitute of exuberant vegetation as Malta, we find the same types of fever prevailing in it as in the most unhealthy countries. But when we know that the rocky island of Minorca, the summer-dried beds of winter-torrents in Spain and Portugal, and the arid sands opposite Lisbon, are equally productive of the remote cause of Marsh fever, we readily admit the possibility of its existence in the soft porous limestone of Malta, and cannot doubt of its exerting its pernicious influence; when we observe that fever there, as in other places, is limited to particular spots, connected with moisture, beyond which it does not pass.

Though Malta "contains neither rivers, lakes, bogs, nor morasses," Dr. Hennen points out two spots particularly "which are quite sufficient for the production of Remittent and Intermittent fever," and which, in former times, were drained by the Order of St. John, at great expense. These are, "the valley at the head of St. Paul's Bay," and that "at the head of the great harbour," near the last of which a village, once the favourite resort of the Knights of the Order, is now deserted. The

monks of a convent at the same spot formerly had a dispensation exempting them from performing certain night masses, as their celebration exposed them to the noxious exhalations at a time when the body is most susceptible of their influence. The ships also, which anchored near the head of the great harbour, in the last war, suffered from Remittents in August and September; and "so purely were these fevers of local origin, that they invariably ceased on moving the vessels lower down, to Bighi Bay."

In October 1821, Dr. Hennen had an opportunity of observing a few cases of fever at Musta, which had been contracted in the valley at the head of St. Paul's Bay, known by the name of the Marsh of Paoles. Musta is situated on high ground, about a league from the valley. Many of the poorer inhabitants resort to Paoles in autumn for agricultural purposes, and it was among these exclusively that the disease appeared. "They returned," says Dr. Hennen, "from labour with their health impaired, and when the fever fully developed itself, it proved to be the genuine offspring of marsh miasmata. I could not, after the most minute investigation, discover that the disease had been communicated to the persons residing in the same houses with the sick, and none of the other inhabitants were affected."

The valley at the head of the great harbour has been formed by the retrocession of the sea, and an accumulation of alluvial soil brought down by the rains. It was examined by Dr. Hennen in June and July 1824, when the exhalations were very

offensive to the smell: "The navigation through the shallows is intricate, and whenever the boatman struck the mud with his oars, an exceedingly disagreeable factor was extricated from it."

This valley extends about four miles into the country, and connects itself with that of Missida, the two being separated by a ridge, on which the city of Valetta is built, except at the base of the rising ground on which Citta Vecchia stands. The high road between the cities runs on this ridge, and as it is narrow, the two valleys are not more than a mile apart. "The luxuriant vegetation of these valleys," says Dr. Hennen, "gives the unerring assurance of much underground moisture, and in fact the largest *fiumare*, or bed of a winter torrent, in the island runs through the village of Curmi with a bridge thrown across it. This village, which stands about the middle of the great valley, and two miles from Valetta, is spoken of by Abela as suffering in his time from the bad air of the marsh, 'inasmuch,' says he, 'that the inhabitants are unhealthy, and show it by their squalid countenances.' This remark was verified by subsequent events, for in proportion as the marsh was drained, the village became more populous and healthy; and although the Plague of 1813 committed dreadful devastation there, it is not at present considered an ineligible residence. Subsequent to the time of Abela, one of the Grand Masters moved all the public ovens to the village, with a view of correcting the air.

These facts are sufficient to establish the existence and the local operation of malaria in Malta; and

the general healthiness of its climate must evidently be owing to the rarity and the limited extent of such insalubrious places, and to the dry and rocky character of its general surface. In the city of Valetta, lat. $35^{\circ} 54'$, however, which is described as one of the finest in Europe, there is one part called the Mandraggio, which from its situation and confined air must be often productive of disease in a climate of such high temperature. Hennen says, "There are certain neighbourhoods along the line walls, especially at the Mandraggio, where the poor are congregated in dense masses, and lodged in abodes which exclude light and air sufficient for ordinary ventilation and cleanliness. This district has been recovered from the sea in former ages, and is at present below its level; damp, filthy and comfortless, the houses crowded, and the streets narrow and unpaved. At all times the inhabitants have a peculiarly sallow and unhealthy aspect, and the Plague raged with the most fatal violence among them, so that scarce an individual escaped the contagion."

The mean temperature of Malta, according to Dr. Hennen's tables, is about 63° on an average of six years. The thermometer was placed within doors, and the extremes were 46° and 90° . Some rain falls about the end of August, but the rainy months are from December to February; an occasional shower may fall in April or May, but from June to August scarce a cloud is to be seen. October and the early part of November are delightful, the air sensibly cooled, and occasionally refreshed by showers. South and south-west winds always

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bring clouds and fogs; and strong north-east winds, fogs and heavy rain. The dews are heavy in spring and autumn and whenever a *strecoo* or south-east wind blows, which is always damp, suffocating and disagreeable to the sick.

The information as to the precise character of the fevers among the native inhabitants is entirely wanting; but Dr. Heinen says that, from the police and hospital physicians, he is authorized to state "that Remittants and Intermittents are of annual occurrence among the resident inhabitants, and in considerable numbers."

The total number of fever cases admitted into the civil hospital in 1821, 1822 and 1823, was 1300; and the deaths were 194, or 1 in $6\frac{1}{2}$; and the fever cases to all other diseases were at 1 to 7.

Musta and Nasciaro, villages nearest the marshy ground of Paoles, have generally suffered more from fever than other places of equal population. Curmi has suffered more than many other places, though not nearly so much as the two former. Their unhealthiness in 1823 is at once seen, as compared with Valetta.

Valetta...	population 25,546;	died of Fever	42... 1 in 567.
Musta ...	3,069;	_____	38... 1 — 89.
Nasciaro .	2,965;	_____	16... 1 — 185.
Curmi ...	4,130;	_____	12... 1 — 344.

Of the diseases of the troops the information, as might be expected, is more precise, though there are no documents which go back further than 1816. The total admissions of diseases into the hospitals for eight years, ending 1823, were 19,549; and the deaths were 312, or 1 in 62. Of these admissions, 3420

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were fevers, or 1 in 6; and the deaths were 77, or 1 in 44½.

	1816.	1817.	1818.	1819.	1820.	1821.	1822.	1823.	Total	Deaths.
Garrisons ..	4007	3912	2430	1648	1553	1737	2430	2234	19106	
Quotidian ..	22	102	27	9	2	7	30	9	208	10...1 in 20½.
Tertian ...	...	47	19	47	9	...	1	3	126	9...1 in 63.
Quartan ..	...	4	1	...	...	...	...	...	5	
Remittent ..	12	58	1	...	2	1	...	...	74	18...1 in 5½.
Continued ..	538	322	347	281	232	337	580	300	2937	45...1 in 65½.
Intermittent ..	...	...	1	...	...	...	...	...	1	11...1 in 1.
Synochus ..	...	21	...	5	1	1	23	14	65	9...1 in 32½.
Typhus ...	3	...	1	...	...	...	...	...	4	4...1 in 1.
Total	575	554	397	342	246	346	634	326	3420	77...1 in 44½.
Deaths...	6	24	18	5	5	2	14	3	77	

Out of 19,106 men, there were 413 cases of Intermittents and Remittents, or 1 in 46½. But this affords no accurate result, as more than one half of the cases were, in 1817, from the Ionian Islands, and most of the others were supposed to be derived from other places, leaving therefore the Continued fever as the great endemic of the troops.

As 1817 was a year in which Typhus prevailed throughout Great Britain, it will be interesting to quote the Report of Inspector Warren, who says, that at Malta "the mortality from June to December, 1817, was more than double that of the same period in 1816, nearly three fourths of the mortality having occurred in troops who touched at Malta on their way from the Ionian Islands to England, in a most wretched condition." They were removed from the Lazaretto to a healthy situation and more comfortable accommodation, but it appeared "as if the powers of life had been at once suppressed, for those who got over the

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first attack, in many instances lingered on for weeks, with pale lips and a sunken countenance, until a relapse, or other diseases, hurried them to the grave."

Of the remaining cases of Intermittent and Remittent fevers, Dr. Hennen thinks few were of local origin; and since his arrival at Malta in 1821, he saw no example of a Remittent fever, and only 50 Intermittents, 46 of which were Quotidians, and 4 Tertians.

These facts are proofs of the general healthiness of the troops in Malta, so far as Marsh fever is concerned; but of the endemic origin of the disease in the island there can be no question, from what has been admitted of the diseases of the inhabitants; and the exemption generally of the troops from Marsh fever, is to be attributed to their superior accommodations in barracks in healthy situations.

Dr. Hennen gives a Table of the monthly admissions of fever into the military hospitals from 1816 to 1823. The total during the eight years were :

January	217	} An increase from " Catarrhal fevers."
February	207	
March	158	} These months, and December, all of a mild temperature, are most free from fever.
April	184	
May	189	
June	272	} The fever increasing in the three hottest months.
July	498	
August	487	
September	540	} Fever declining with the temperature.
October	322	
November	194	
December	156	Fewest cases of fever.

Of the Continued fever, forming so disproportionate a number of the whole cases, Dr. Hennen says "many are doubtless the ephemeral effects of excesses of various kinds, especially in drinking," and from his Table it appears that Catarrhal fevers are included under this head. But the true Idiopathic fever of Malta seems to be chiefly the product of increased temperature; and hence it is called, both there and in Sicily, the summer fever. The rate of mortality in it, viz. 45 out of 2937, or 1 in 65, is a clear proof that it cannot be a specific fever; for a Continued fever from malaria or contagion in a climate like Malta, in persons especially not inured to such a high temperature, would prove far more fatal in its character. And the extreme rarity of those forms, which are the unquestionable product of malaria, and which abound in similar latitudes to the exclusion of almost every other of its types, at least in unhealthy situations, is a circumstance which militates against the idea of its being attributable to exhalations from the soil.

Dr. Skey, in speaking of the summer fever of 1816, says that it lasted but six days, and out of 28 cases he lost only 1, who in fact sunk under Phthisis. "It was ushered in by high arterial excitement, after a cold stage, with severe general headache, flushed countenance, suffused eyes, and severe febrile pains at the scrobiculus cordis and hypochondria shooting into the chest; and increased by inspiration, with tension and tenderness of the abdomen followed by bilious vomiting and dark feculent discharges. The tongue was never dry, commonly with a thick white or dingy yellow coat, the intellectual functions were

but slightly affected, and delirium or coma never observed. Those who brought sound constitutions into the disease were left uninjured by it, and in young healthy subjects who were early and actively treated, the fever was of short duration, nor did it often happen that the blood drawn had a buffed appearance."

Dr. Kennedy says, that "in 1820 the disease, for the most part, was first seen in a state of high excitement; the pulse quick, full and bounding; the headache and pains of loins severe, the face flushed, pain in the brain and eyeballs, skin hot and dry, and the depression of strength considerable."

Mr. Lightbody, in 1822, says that in most cases "the affection was sudden, and attacked in an ardent form, and blood-letting was the only remedy which seemed to have the power of cutting short the disease, and required to be practised with great liberality. In some cases 52 ounces were taken at once without inducing syncope, but with the effect of putting a period to the disease: vomiting frequently accompanied the use of the lancet, and the peristaltic motion of the intestines, when they had been previously torpid, was also powerfully excited by the same means, more especially when purgatives had been previously administered. The blood in general was not cupped nor buffed. One copious bleeding in a majority of cases was sufficient, and the greatest number of those admitted previous to the 20th of August were discharged convalescent in from five to eight days. Yellowness of the cutis took place only in one instance previous to September; but more than one case terminated in Hepatitis."

This fever was evidently analogous to the Inflammatory endemic of the West Indies, as described by Mr. Dickinson, and was what Dr. Armstrong considered common inflammatory fever, excited by ordinary causes under the stimulus of a high temperature. It has nothing like the profound collapse in the remissions of the Marsh Yellow fever, observes no regularity as to the periods of the intermittent or remittent types, neither arises out of them nor does it end in them. It is a disease evidently of high excitement, of what Dr. Armstrong called simple fever, followed by inflammation in different parts, according to the individual predisposition, and was arrested at once by copious depletion and calomel purges. We know that the Marsh Remittent Yellow fever is the joint product of malaria and heat, operating exclusively on constitutions not inured to a high temperature, and that like all other forms of the marsh endemic it often prevails at uncertain and irregular intervals as an epidemic, and is attended with great mortality, as the aggravated epidemics of Marsh fever often are. I have already remarked that the general absence of the sources of malaria at Malta, and the infrequency of the common periodical types of its fever, are facts which militate against the idea of the Continued fever of the island having a marsh origin, and that the rate of its mortality supports this view. Yet it is highly interesting to observe how closely in symptoms this common fever resembles the early period of the highly excited forms of the specific one. It is true that the invasion is more sudden, never coming on under the mask of that sluggish congestion and

prostration of strength which is remarkable in the "walking cases" mentioned by Rush; nor is the convalescence slow and doubtful, subject to relapses or to chronic obstructions of the viscera; nor do we observe the complication of cholera, of dysentery, of the black vomit, of that tendency to irregularity and loss of balance in the circulation, to passive hæmorrhages, to syncope, the coma, the low and muttering delirium, the coldness of the extremities, the sweats, the convulsive symptoms, the petechiæ, and that peculiar dull and muddy expression of the eye, which are all so characteristic of Marsh fever. But we have rigor in the commencement, followed by high heat and ardent fever, pain of the head, forehead and eye, bilious vomiting and stools, and sometimes yellowness of skin; and unquestionably the mortality would be great and the fatal termination early, if the cases were neglected or treated inefficiently. But considered and treated as a disease of high simple excitement which is rapidly passing into inflammation, it is at once arrested; and, as Dr. Skey remarks, those who bring sound constitutions into it are left uninjured by it, which is very often otherwise after severe Marsh fever.

Dr. Hennen, who saw this fever at Malta in 1822, says, that "some of the viscera were found in a state either of high inflammation or of approach to it, and the liver frequently in a state of suppuration. In one case with yellowness of skin, there was a copious effusion of yellow serum in the ventricles, the dura mater was covered with a thick crust of yellow lymph, the pericardium, pleura and peritoneum besmeared with a yellow soapy matter, the colon and

other parts of the alimentary canal exhibited marks of antecedent inflammation, but the liver was only much enlarged."

The yellowness of the skin was reducible to no law, being observable often when no particular affection of the liver was to be detected, and absent when it showed all the marks of inflammation. It occurred in some years, and not in others. "In 1822, when it was frequent in the fever cases from the 80th regiment, it was not so in other regiments, in the natives, English residents, travellers, or merchant seamen; while in the 80th neither the old nor the young, the recruits nor the veterans who had served in the Indies, the abstemious nor the intemperate were exempt from it, and it continued in many for an indefinite period, often protracted long after convalescence, and was apparently uninfluenced by the medical treatment."

The solitary "icteroid" case, and the four cases marked "Typhus," Dr. Hennen supposes were examples of the summer fever, the one with intense yellowness of skin, and the others with extreme debility after the fever. "I have not met with an instance," he says, "of what I would call genuine Typhus, since I came to the island; but I have seen not a few cases of fever, which if it were not for the difference of the period of continuance, of the mortality, and the absence of black vomit, I should not hesitate to call genuine Yellow fever."

The views, therefore, which I entertain on the subject of Marsh fever are borne out by the facts which occur at Malta; for though fever is perhaps the prominent disease of the island, we find that it

is of two distinct kinds, viz. Marsh fever, limited to particular situations, and common Inflammatory fever, the product of ordinary exciting causes, operating under a high temperature. The one is, as usual in such a latitude, of the intermittent or remittent type; and the other, though continued, to be clearly distinguished from the specific. Continued fever of higher latitudes.

Corfu, in lat. $39^{\circ} 36'$, abounds in local situations productive of malaria, and consequently its fevers partake more of the marsh character than those of Malta. A number of fresh-water lakes or marshy ponds are to be found in all directions, in the environs of the harbour, and in the valleys of the more distant hills. The Val di Roppa is the most remarkable, about seven miles from the city of Corfu, yielding rich crops of rice and corn. It is resorted to by the garrison sportsmen, who are often affected by Continued and Remittent fevers, and the inhabitants of the vicinity are liable to obstinate Intermittents, especially in the autumn.

At Castrades, a low village on the sea coast, the French cut a large canal, varying from 28 to 60 feet in width, intended as a communication between an internal lake and the sea; but it was never completed. General Denzelot, on surrendering the island, informed the British Commander of the unhealthiness of this spot; and the principal medical officer of the British army told Dr. Hennen, that "the troops on occupying it were almost immediately seized with Remittent and Intermittent fevers, the latter type being conspicuous among the foreigners in the army, while the former attacked

almost exclusively the British soldier." Dr. Gaggardi, in a report to Sir. F. Adam in 1819, stated, from his long residence and from an examination of the medical records of the suburbs, near this great excavation, that the periodical fevers, which usually went through a regular and benignant course, had given place to bilious Remittents, and to Synochus with petechial eruptions, an effect which he chiefly attributed to the canal.

The point of the island opposite "the pestiferous marsh or lake of Bucintro," in the continent of Albania, was obliged to be abandoned as a military station. The French and Russians, who had small garrisons of observation there, were invariably attacked with Remittent or Intermittent fever, and even the Albanians in the British army could not breathe the air with impunity.

The soil of the island is rich, principally a stiff tenacious clay, retentive of moisture; and Dr. Hennen says that there is scarcely a square mile free from malarious exhalations. Fogs are common in August and September. The prevailing winds in autumn and winter at Corfu are from different points of the east and south, and all those of the latter are oppressively hot, and accompanied with mist and rain. The *sirocco* is from a point a little to the southward of south-east and without affecting the thermometer in any remarkable degree, it gives a sensation of burning heat and oppression at the chest with languour and a propensity to perspire on the slightest exertion. Wounds and ulcers and the discharge from mucous surfaces, deteriorate during its prevalence: the walls, floors and pavements be-

come wet. Yet, though so charged with moisture, vegetation appears shrivelled and burnt: meat taints rapidly, and drains and vaults emit a more putrid smell than at any other time. The method of escaping from it, is to shut the doors and windows. Hennen quotes a fact from Varro which shows that in early times the southerly winds of Corfu were considered exciting causes of disease. Varro landed on the island while a pestilential disease was raging, and by opening the windows of his house towards the north, closing the others, and changing the entrances, he preserved the health of his family.

A wet summer is invariably followed by an unhealthy autumn, which is felt by all classes of the inhabitants; but while malaria "produces Intermittents in the natives, it gives rise to severe Remittents in the less seasoned troops." Hennen, at p. 189, states this as "*a curious fact*," and mentions that in 1816 the troops were obliged to be removed from the village of Argirades in June, on account of Remittent fever, while the inhabitants at that time suffered slightly from Intermittents.

The information respecting the fevers of the natives is unfortunately confined to barren names, from which nothing satisfactory can be inferred. They are said to be "in spring Synochus, in summer bilious Remittents, and in autumn Intermittents, and sometimes, though rarely, Typhus." This last disease is said to have been introduced in 1758 from Italy, and in 1798 by the French, and Plague to have been imported on various occasions, as in 1815.

Though Corfu is 4 degrees north of Malta, its latitude is too low for Typhus, or for any form of Con-

tinued Marsh fever, except such as might arise out of the remittent type, especially as we have found no form of fever noticed by Torti at Modena in lat. $44^{\circ} 34'$, or by Lancisi at Rome in lat. $41^{\circ} 53'$, answering precisely to the ordinary Typhus of this country, the disease no doubt meant by Dr. Hennen; and it is much to be regretted that we have no facts to determine the nature of these imputed imported fevers, nor to ascertain at what season or in whom they appeared. If among the Italians or the French, we should expect that British troops might have manifested the same disease from the liability of their conveying it from home, on the idea of its contagious nature, or from the effects of the malaria in the island; but on the contrary we find that out of 5734 cases of fever among them during seven years, only two are referred to Typhus.

This appears from the Table of Fevers among the troops admitted into the hospital from 1815 to 1821,—as follows :

	1815.	1816.	1817.	1818.	1819.	1820.	1821.	Total.	
Garrison ...	2867	2989	1821	1670	1898	1684	1785	14714	Deaths.
Quotidian ...	...	...	56	59	55	63	109	349	5..1 in 69.
Tertian.....	...	...	76	39	39	36	97	287	2..1 in 1434.
Quartan ...	...	...	2	4	3	1	7	17	
Remittent ...	114	719	202	136	59	40	130	1400	119..1 in 112.
Continued...	111	303	293	546	838	590	618	3299	40..1 in 824.
Synochus ...	...	...	1	10	...	...	...	11	2..1 in 54.
Typhus ...	...	...	...	2	...	...	...	2	2..1 in 1.
Total ...	225	1022	630	796	994	730	961	5358	170..1 in 314.
Deaths ...	18	33	35	24	36	9	15	170	

In this Table there is an omission of 376 cases of *unclassified* Intermittents, which makes the whole num-

ber of Intermittents and Remittents out of 14,714 men, amount to 2422, or 1 in 6; while in Malta, out of 19,106 men, there were only 413 cases, or 1 in 46 $\frac{1}{2}$, and these were mostly the produce of other countries.

The total of all diseases admitted was 15,191, so that fever was in the proportion of 1 to 2 $\frac{3}{4}$.

The symptoms of the fever are not noticed, and therefore I shall briefly refer to those of Cephalonia, Zante, and Santa Maura.

Cephalonia, the capital of which is in lat. 38° 8', is rugged and mountainous; its climate variable, but the winds blow with great regularity. The Black Mountain, opposite the coast of Zante, is 3625 feet in height, and is usually covered with snow from December to May. The thermometer in the shade at Argostoli, the capital, varies on the average of twenty-four hours from 52° in winter to 78° in summer. In July and August it sometimes rises to 88°, but generally with a fresh breeze at north-west: it ranges in these months from 74° to 80°.

There is no stream deserving the name of river in the island, but many ravines, or "*fumares*," which flow to the sea when swelled by winter rains. An arm of the sea at the western end of the island extends in a northerly direction nine miles, and terminates in the low marshy bay of Livadi; an inlet branches from this arm, and terminates in a south-eastern direction in a similar bay, the lagoon of Cutavo. This inlet forms the harbour of Argostoli, which is built on a slip of level ground, some of the houses standing on made ground recovered from

the sea. "It is to the lagoons at each extremity of the harbour, and to the mountain gulleys in the vicinity, that the malarious exhalations, as they affect the troops, are principally to be traced." There are no regular barracks; the troops are quartered at the northern extremity of the town, the most remote from the lagoon of Cutavo; and "although the situation is more healthy than the southern, where the 14th regiment was quartered in 1816, when disease made such dreadful ravages among them, yet the accommodation is the worst in the Ionian Islands. In summer the winds generally blow from sunrise till noon from some point between the east and south, very often from the south-east, or *sirocco* point: from noon till midnight, they are between the north and west; the remainder of the night is calm. It is obvious that all of them must convey the miasmata of marshes to the town, as it is encircled by them on all sides."

The great endemics of the country are Remittents and Intermittents, and not less than a fifth of the inhabitants are supposed to suffer from them annually; and the mortality is about $1\frac{1}{2}$ per cent. while that of the troops is never less than 3 per cent. The Remittents commence about the middle of June and last till the middle of September, when they are succeeded by Intermittents, which continue till January.

The British troops suffer from the same fevers, but more especially from Remittents as compared with the natives. In 1816, out of a garrison of 307 men, there were upwards of 80 deaths, while of

12,000 natives attacked, only 50 died : the population is estimated at 54,000.

The Table of fever from 1815 to 1821 given by Dr. Hennen, is so much in contradiction with his statement of the mortality in 1816 above, that I cannot make use of it. In that Table it is stated that out of 1049 cases of fever there were only 14 deaths; while immediately after it is said that in 1816 there were 213 Remittents and 202 Intermittents, and of the former 75 were fatal, a mortality of 1 in 3. In 1815 there were 23 Remittents and 21 Intermittents; so equal a proportion in both cases, that Hennen offers it as a proof of the cause of both diseases being one and the same, and of the type of the fever being influenced by the circumstances or constitution of the patient.

The statement of fevers (p. 298.) admitted into the hospitals from July 21st, 1815, to December 20th, 1821, is not in accordance with the text, nor with the Table at p. 284. I shall give it, with the average strength of the garrison, that the proportion of Intermittents and Remittents may be seen. The conclusions drawn from it, especially with regard to mortality, must be erroneous; for it will be recollected in the Malta report that many deaths were said to have taken place in 1817, among troops landed in a miserable state of health from the Ionian Islands, and, probably, of these more or less were from the garrison of Cephalonia. The destruction from the fever in 1821 is said in the text to have been great, and yet from the Table this does not appear, being about 1 in 25.

	1815.	1816.	1817.	1818.	1819.	1820.	1821.	Total.	
Garrison...	334	396	270	211	266	250	535	2292	Deaths.
Quotidian.	...	...	12	2	6	6	89	115	2..1 in 574.
Tertian ...	...	...	36	81	16	...	82	215	1..1 in 215.
Quartan...	...	...	13	...	...	4	2	19	
Remittent.	23	213	76	62	32	87	113	606	88..1 in 7.
Continued	13	41	...	...	34	...	243	331	12..1 in 274.
Synochus.	...	...	...	3	1	...	...	4	1..1 in 4.
Typhus ..	...	2	...	...	...	...	...	2	1..1 in 2.
Total...	36	256	137	143	89	97	529	1292	105..1 in 124.
Deaths.	0	78	4	0	2	0	21	105	

Out of 2292 men there were 955 cases of Intermittents and Remittents, or 1 in $2\frac{1}{2}$. The mortality from Continued fever being so great as 1 in $27\frac{1}{2}$, is a proof that under this head many cases of Marsh fever must have been included.

There is an imperfect account of the fever of 1821 in the 36th regiment, "many cases of which, of an Intermittent and Continued character, changed to a Remittent, and *vice versa*. Out of 129 Remittents 10 were fatal. A heavy fall of rain occurred in the early part of July, followed by great and sudden atmospheric changes, and fever, under various forms, crowded the hospitals, and extended itself to all classes, ages, and sexes, of that corps, which had been previously healthy.

"The symptoms which usually ushered in the disease were rigors, &c., alternating with violent sensations of heat, accompanied by nausea, vomiting, acute pain in the head, particularly across the forehead, and in the back, limbs and large joints. The thirst was urgent, tongue and lips parched, skin hot and dry, pulse full and strong; after a longer or shorter period, a remission of all these

symptoms, or an alteration in some of them ensued, commonly preceded by a moisture of the skin, but in a few hours an exacerbation more violent than the first followed. In many the symptoms were more severe. Great determination to the head existed, with acute pain over the eyes, intolerance of light, the face flushed, eyes suffused, the features swollen and prominent, intolerable pain in the great joints, sometimes with indistinct articulation, and a staggering gait. In those who died of Remittent fever, the brain was found with numerous bloody points, the membranes distended with florid blood, and a great quantity of serum effused beneath the membranes and at the base of the brain. In every case the spleen was disorganized, often soft and pulpy, resembling a mass of grumous blood, and the contents of the gall-bladder of a tar-like consistence and colour."

Dr. Hennen adds that "the loss was great, and the squalid countenances, and frequent relapses, together with the visceral disease which long existed among the men, showed that their constitutions had been deeply injured, and remind us more of what we have seen after the expedition to Walcheren than any other of the sequelæ of disease I have seen." This fever bears a strong resemblance to the Break-bone fever of Rush, and is the nearest approximation to Typhus that the latitude of Cephalonia perhaps admits of. Its character, the remissions attending it, and the sequelæ of the disease, clearly separate it from the Inflammatory endemic of Malta.

Zante, lat. $37^{\circ} 42'$, at its western extremity is

only 10 or 12 miles from Cephalonia, and has two great divisions, the mountains and the plain; the former occupying about three fifths of the island, and the great plain the remainder, consisting of alluvial soil. The city at one extremity has a deep ravine, which Dr. Hennen considers a great source of malaria, and he mentions the fate of a family residing on its western bank, from which six persons out of seven died of autumnal Remittent fever. The sandy and barren flats near the sea, though the surface is parched and baked by the sun, give proof, from the existence of aquatic plants, of underground moisture; and when examined by Dr. Hennen, he found that his horse's feet often broke through the exterior crust, forcing up a very offensive mud; and it was from these situations that in 1816, when the troops formed a cordon round the island for its protection from Plague, which ravaged the adjacent shores, the most severe and most fatal cases of Remittent fever were contracted. He supposes "the most dangerous of all exhalations are those which are exalted from beneath the surface, where they have long been pent up, and may have contracted vicious qualities from concentration, for want of agitation and dilution by the wind." The only military post is in the city: and the Mole barracks, which have a beach in front and a stagnant branch of the harbour in the rear, are unhealthy: out of 182 men stationed in them, 127 were attacked by autumnal fever; while of 523 in the Castle and Trinita barracks, only 192 had the disease; and of 32 deaths, 23 were of men from the Mole.

The thermometer varies from 50° in December

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and January to 91° in August. The prevailing winds are north-west in spring, north in summer, and south in autumn, and south-west in winter. The first rains fall about the latter end of September, and the winter is wet. It seldom rains after May; and when it does, a sickly season is prognosticated, and generally on good grounds. "The Intermittent and *Typhus mitior* succeed the damp, cold westerly winds; but this last and *Typhus gravior* are little known in the country, though it is a name frequently, but erroneously, given in many instances by the native practitioners to the Remittent in its last stages."

The peasants, especially of the mountains, are hardy, and the latter exempt from disease generally, except when they catch Remittents or Intermittents in their descent to the plains, or to the marshy districts of Elis and Arcadia in the Morea.

Of the diseases in the British forces the following Table will furnish data. The strength of the garrison is not mentioned.

	1816.	1817.	1818.	1819.	1820.	1821.	Total.	Deaths.
Quotidian...	84	124	38	23	25	41	335	0.
Remittent...	360	40	53	6	247	1	707	51...1 in 14.
Continued...	55	26	55	13	160	437	746	40...1 in 18½.
Typhus	...	2	...	...	...	...	2	1...1 in 2.
Total...	499	192	146	42	432	479	1790	92...1 in 19½.
Deaths...	32	10	8	0	5	37	92	

The fever of 1821, as it occurred in the 8th regiment, is reported by Dr. Cartan, the surgeon. It will be seen, on reference to the Table, that the fever of that year is reported principally as Con-

tinued; but Dr. Cartan remarks, that though so denominated, "it frequently assumed the remittent character after the end of July." The number of cases of Continued fever was 437, and the deaths were 37, or about 1 in 12. As there was only one case reported as Remittent, and as no deaths in any of the years are reported among the Intermittents, we may consider that the mortality has exclusive reference to the Continued fever. But there can be no doubt that under this denomination Catarrhal fevers, as at Malta, and cases of common fever were included; and as these are generally manageable disorders, the specific form of fever was probably fatal in a larger proportion than that above stated. In 1816, which was a sickly year, there are 360 cases of Remittents, and only 55 of Continued fever; and uniting these, as the two forms are in 1821, we have, out of 415 cases, a mortality of 32, or 1 in 13. The proportion, therefore, is nearly the same in the two years: and as out of 707 Remittents in the six years the mortality was 50, or 1 in 14, and out of 746 Continued fevers the mortality was 40, or 1 in 18½, I think it evident that under the name of Continued many marsh cases are included, but that common fevers form some proportion, which render their mortality on the whole less through the entire period. This is confirmed by the admission of Dr. Cartan, that in 1821 remissions frequently occurred in the Continued fever; and we have seen in Malta, where this disorder was clearly of a non-specific nature, that the mortality from it was only 1 in 65. At Malta, the troops were exposed to all

the usual effects of a high temperature, but not so much to malarious exhalations, and therefore the Inflammatory endemic was clearly defined in that island; but in the Ionian Islands they were exposed equally to both causes, and though common disturbing occasions, under the heat of summer, would undoubtedly excite in them common fever, yet such causes would often excite the specific disease from the men being exposed, as in Cephalonia and Zante, to situations notoriously abounding in malaria. But we have no means of knowing what proportion of the Continued fevers of Zante were of a non-specific character; and, on the supposition that some were of this kind, the general description of the disease is vitiated, as the line of separation between the Continued fever of Malta, as described by Dr. Skey, and of the Remittent fever from malaria, is so clear and defined, that a person confounding both as one disease would inevitably fail, in a general description, to give an accurate idea of either. It is in consequence of the purity of the atmosphere of Malta, as shown by the comparative exemption from Intermittents and Remittents, and the well-defined character of its common Continued fever, that the description of the last, occurring under the circumstances connected with it, is so peculiarly valuable.

The fever of 1821, as described by Dr. Cartan, is clearly, however, Remittent fever. "It was often ushered in by rigor, or more frequently by alternate heats and chills, succeeded by heat, tension, and soreness of the epigastrium, gastric irritability and vomiting, with torpid bowels; or, in a few

cases, dysenteric irritation, pain of head, across the loins, and in the great joints, more especially the knees, soreness of the whole surface, suffusion of the eyes, in many instances the countenance sallow, and the conjunctiva tinged; pulse rapid and small, skin pungently hot, tongue moist and furred, in a few cases clean and florid, in some brown and dry in the latter stage. These symptoms usually marked the disease for the first two days; it then assumed a remittent form, and if not arrested, went on to a fatal termination; on the third day usually, sometimes later, delirium and indistinct articulation supervened, the deglutition became somewhat difficult, the pupils dilated, the hands and fore arms fixed by the convulsive tension of the muscles, the men always wishing to get out of bed. There was great want of sleep, the torpidity of the bowels continued, the evacuations dark, foetid and watery, and in the advanced state of the disease they had a substance floating in them like chopped tobacco leaves, or like the white of eggs boiled hard and broken down. Lumbriæ were, in many instances, ejected per anum and by vomiting; the urine was dark and turbid, as if clotted blood was dissolved in it; the pulse feeble; some had epistaxis, others blotches, which receded and reappeared on the surface, as if stung by nettles, and many became suddenly yellow. As the disease proceeded there was an evening exacerbation with intolerable heat of skin, and morning remissions with a profuse and useless sweat, the skin remaining hot; at length the exacerbation was succeeded by collapse, with hurried and anxious respiration, a

thready intermittent pulse, picking of the bed-clothes, involuntary colliquative stools, and cold clammy sweat. In some cases clotted or fluid blood was passed from the bowels immediately before death. In a few cases the high action appeared in the morning, and remission in the evening, which was a dangerous irregularity; there was an extraordinary desire for food and fluids."

Though this report is not methodical, it is enough to show that the fever was very different from the Continued fever at Malta. It has some resemblance to the Lake fever of America; and, as I remarked in the disease of Cephalonia, is the nearest approach to Typhus which the latitude probably admits of.

The account given of the fever at Santa Maura, latitude 39°, opposite the Gulf of Arta, and about 10 miles from Cephalonia, affords some evidence of the fact, that, under Continued fever are included slight cases of common fever and Remittents. I shall not stop to consider the character and topography of the island. At p. 356. there is an account of a small canal, cut by the British troops, in a situation which to all appearances exposed them to the usual effects of malaria, from which, however, no evil resulted; yet the French, in cutting the canal in Corfu, are said to have lost 2000 men. (p. 150.) These facts are analogous to what is observed of the healthiness of different places in different years, and must be classed with those which show the unaccountable capriciousness of the visitations of Marsh fever. Major Temple, the Commandant of Santa Maura, informed Dr. Hennen that he never could depend

with certainty upon the permanent healthiness of the same village for two seasons in succession, those which were free from disease one year, proving pestiferous the succeeding, and *vice versd*. It is unnecessary to multiply examples.

The following Table shows the average strength of the garrison, and the fevers, at Santa Maura.

	1815.	1816.	1817.	1818.	1819.	1820.	1821.	Total.	
Garrison	195	195	268	307	495	322	359	2141	Deaths.
Quotidian	...	...	22	17	44	46	26	155	1...1 in 155.
Tertia n...	...	...	4	1	10	14	43	72	
Quartan...	...	...	5	...	...	...	...	5	
Remittent	25	53	89	41	90	56	176	530	32...1 in 16½.
Continued	...	2	15	27	109	32	...	185	3...1 in 61.
Typhus....	...	13	...	...	...	...	...	13	2...1 in 6.
Total...	25	68	135	86	253	148	245	860	38...1 in 22½.
Deaths...	0	2	12	1	7	4	12	38	

Out of 2141 men, there were 762 cases of Inter-mittents and Remittents, or more than 1 in 2½.

It appears from this Table that the deaths from Remittent fever were 1 in 16½, while those from Continued were only 1 in 61; a difference which clearly shows that common fever formed a large proportion of the last; for no fever of a continued character, arising from specific causes among British troops in so low a latitude, could have proved so mild in its result. That a great proportion of the cases was the common fever, arising from ordinary disturbing causes, appears from the report of Mr. Lavens in 1819.

He says, "About the beginning of July, when the weather was very hot, slight attacks of fever became frequent, but continued mild in its nature,

and very easily managed until the latter end of the month : constipated bowels, or intemperance, generally appearing to be the exciting cause of the headache, increased heat and accelerated pulse ; these being almost the only symptoms, which were relieved by a brisk purgative, &c. In two or three days the febrile action generally ceased, and the men shortly returned to their duty."

After the 30th of July almost every case of fever became of the true remittent type, and between the 31st of July and 7th of August, 16 cases were admitted, of which three terminated fatally.

The symptoms of this Remittent fever were, an oppressive pain in the head, chiefly about the temples and forehead ; in the back and limbs ; sometimes severe cramps in the thighs and calves of the legs ; redness and some degree of tumefaction in the face ; eyes red and watery, light occasioning a sharp, deep-seated pain in the orbits ; tongue white and moist ; great heat, and for the most part profuse perspiration ; pulse about 100 and full ; bowels generally costive. These symptoms were almost always preceded by rigors, or chillness down the back ; and if the disease was more advanced before being reported, there was a considerable diminution of strength, and stupor, giving the appearance of intoxication.

Two or three violent cases occurred during the autumn in robust stout men, who were suddenly seized while cleaning their accoutrements. They dropt down in a state of insensibility, followed by delirium, staring and prominent eyes, and wild countenance. The loss of eighteen ounces of blood

from the temporal artery restored their senses, and the fever afterwards was slight, and complete remission procured in two or three days.

The first stage was seldom attended by vomiting. A remission usually took place about the third day, or towards the fifth or sixth: in few were they more perfect on the third or fourth day than in the cases of three men, who died, two of whom were bled in consequence of urgent pectoral symptoms.

The exacerbation took place at irregular periods, generally towards the evening, sometimes during the night, always becoming more remarkable as the disease advanced, and invariably preceded by chills down the back and loins, and a creeping sensation all over.

The second stage was frequently marked by lightness and giddiness in the head, increased by an approach to an erect posture, or by drowsiness. As the disease increased, vomiting of bilious matter continued, and the progressive symptoms were a quick feeble pulse, anxiety, incoherency, tremors and starting, sordes about the teeth, and involuntary evacuations. In four fatal cases a deep yellow suffusion appeared about 24 hours before death, and in a few severe cases a slight yellow tinge in the face and eyes in the course of the disease. Relapses seldom occurred, but the convalescence was tedious after protracted cases.

In many cases, before the remissions were perfect, Mr. Lavens exhibited the bark, first with the Liq. Ammoniae Acetatis, so long as increased heat and dryness of skin continued, after which it was given in substance; and he remarks that he seldom had occasion to regret its administration in this way.

I have only to remark again that this fever is approximating to the Typhus of this country. The 13 cases reported as Typhus in 1816, Dr. Hennen supposes were aggravated Remittents. Similar cases occur in the summer and early autumn of Britain, as those, for instance, reported by Dr. Sutton *, which, though considered as Remittents by himself, were called Typhus by the learned editor of the Edinburgh Medical and Surgical Journal; so difficult is it to determine by names the character of fever, where the periodical and the continued forms are blending together.

In this review of the fevers of Malta and of the Ionian Islands, especially among the British troops, the most striking circumstance is the difference in the character of the prevalent fever in the former as compared with the latter situation. I shall show this by the following Table, exhibiting the number of Intermittents and Remittents and Continued fever in these islands, excluding Zante, as there is no statement of the average strength of the garrison in that island.

	Men.	Inter ^{ts} .	Deaths.	Rem ^{ts} .	Deaths.	Cont ^d .	Deaths.
Malta	19,106	339	12	74	13	2937	45
Corfu	14,714	1042	7	1400	119	3299	40
Cephalonia	2292	349	3	606	88	331	12
S. Maura...	2141	232	1	530	32	185	3

* A practical Account of a Remittent Fever frequently occurring among the Troops in this Climate; by T. Sutton, M.D. Canterbury 1806. See also Edinb. Med. and Surg. Journal, vols. x. p. 501, and xiii. p. 367.

In Malta the Intermittents and Remittents were to the men in garrison as 1 to $46\frac{1}{2}$, and the deaths from them (25 out of 413 cases) as 1 to $16\frac{1}{2}$.

The Continued were as 1 to $6\frac{1}{2}$, and the deaths as 1 to $65\frac{1}{2}$. The deaths, however, in the Specific fever belong almost exclusively to Remittent fever, and in the following Table they refer to them only and to Continued fever. I have also stated the proportion of Remittents alone.

	Malta.	Corfu.	Cephalonia.	S. Maura.
Intermittents and Remittents }	1 to $46\frac{1}{2}$.	1 to 6.	1 to $2\frac{1}{2}$.	1 to $2\frac{1}{2}$.
Remittents	1 to 258.	1 to $10\frac{1}{2}$.	1 to $3\frac{1}{2}$.	1 to 4.
Deaths from Remittents	1 to $5\frac{1}{2}$.	1 to $11\frac{1}{2}$.	1 to 7.	1 to $16\frac{1}{2}$.
Continued Fever	1 to $6\frac{1}{2}$.	1 to $4\frac{1}{2}$.	1 to $7\frac{1}{2}$.	1 to $11\frac{1}{2}$.
Deaths	1 to $65\frac{1}{2}$.	1 to $82\frac{1}{2}$.	1 to $27\frac{1}{2}$.	1 to 61.

It is seen from this Table how greatly the proportion of Remittents increases in the Ionian Islands, and the Continued diminishes, except at Corfu. But I have before remarked that in them, under the Continued, is included an uncertain proportion of Specific fever.

At Malta, the deaths from Remittents are greater than in the three other islands, which is explained from the bad cases taken there from other places, for while the proportion of cases is less at Malta, and far greater in the other islands, the deaths in the first are as 1 to 5, and in the others as 1 to 11, 7, 16.

CHAPTER X.

FEVERS OF MINORCA.

IN the celebrated work of Cleghorn on the diseases of Minorca we have an arrangement of facts which enables us to institute a comparison between its diseases and those of the Middle and Southern States of North America. We find in Minorca the *Cholera infantum*, the endemic Yellow fever, and the bilious Pleurisy of Pennsylvania. It is much to be regretted that those medical men who have written on the diseases of the other islands of the Mediterranean have not taken this classical work as a model. The omission in it is the want of Tables showing the strength of the British garrison, and the proportion of cases ranking under the different varieties of Tertian fever, and a more particular account of the character of fever in the natives and the foreign troops. I nowhere find the distinct traces of the common Inflammatory endemic so well marked in Malta; and in the account of Marsh fever, Cleghorn blends together the Inter-mittent, the Remittent and the Continual Tertian in one general description, which, though it serves to prove his belief in their common origin, deprives us of the opportunity of instituting a comparison between the last and the Continued fever of more northern latitudes.

His account of the *Cholera infantum*, of the adult Cholera, of Dysentery, and of the bilious Pleurisy, impresses on the mind the almost universal agency

of malaria in the modification of fever; and as with Tertian fever they comprise nearly all he has to say on the diseases of Minorca, we are led to believe that malaria is mixed up with most of the common disorders of the island. Cleghorn appears to have been at least seven years resident there, though his epidemics are limited to the five years ending in the summer of 1749. He observes a guarded caution as to assigning particular causes for disease, and appears to follow Sydenham in ascribing much of the changes observable in its character in different years and seasons to general atmospheric influences. We find, however, that local situations are occasionally very sickly; that Marsh fever rises sometimes in the foreign residents to the height of Yellow fever; that the Pleurisy and Peripneumony are more especially the diseases of the natives, of the peasantry, rather than of the inhabitants of towns; and distinctly characterized by those symptoms which betray the agency of malaria, brought into operation by vicissitudes of temperature, as in America, and that the only difference in the disease of either country is the apparent capability of the inhabitants of Minorca to bear larger abstractions of blood for its cure. I shall notice briefly the surface of the island, its climate, and the succession of diseases throughout the year*.

The whole island is what sailors term low-land, with the exception of a few hills near the centre: the surface is rough and unequal, in many places divided by long narrow vales of considerable depth.

* Observations on the Epidemic Diseases of Minorca, 1744 to 1749, by G. Cleghorn, 3rd edition. London 1768.

the usual effects of a high temperature, but not so much to malarious exhalations, and therefore the Inflammatory endemic was clearly defined in that island; but in the Ionian Islands they were exposed equally to both causes, and though common disturbing occasions, under the heat of summer, would undoubtedly excite in them common fever, yet such causes would often excite the specific disease from the men being exposed, as in Cephalonia and Zante, to situations notoriously abounding in malaria. But we have no means of knowing what proportion of the Continued fevers of Zante were of a non-specific character; and, on the supposition that some were of this kind, the general description of the disease is vitiated, as the line of separation between the Continued fever of Malta, as described by Dr. Skey, and of the Remittent fever from malaria, is so clear and defined, that a person confounding both as one disease would inevitably fail, in a general description, to give an accurate idea of either. It is in consequence of the purity of the atmosphere of Malta, as shown by the comparative exemption from Intermittents and Remittents, and the well-defined character of its common Continued fever, that the description of the last, occurring under the circumstances connected with it, is so peculiarly valuable.

The fever of 1821, as described by Dr. Cartan, is clearly, however, Remittent fever. "It was often ushered in by rigor, or more frequently by alternate heats and chills, succeeded by heat, tension, and soreness of the epigastrium, gastric irritability and vomiting, with torpid bowels; or, in a few

cases, dysenteric irritation, pain of head, across the loins, and in the great joints, more especially the knees, soreness of the whole surface, suffusion of the eyes, in many instances the countenance sallow, and the conjunctiva tinged; pulse rapid and small, skin pungently hot, tongue moist and furred, in a few cases clean and florid, in some brown and dry in the latter stage. These symptoms usually marked the disease for the first two days; it then assumed a remittent form, and if not arrested, went on to a fatal termination; on the third day usually, sometimes later, delirium and indistinct articulation supervened, the deglutition became somewhat difficult, the pupils dilated, the hands and fore arms fixed by the convulsive tension of the muscles, the men always wishing to get out of bed. There was great want of sleep, the torpidity of the bowels continued, the evacuations dark, foetid and watery, and in the advanced state of the disease they had a substance floating in them like chopped tobacco leaves, or like the white of eggs boiled hard and broken down. Lumbrici were, in many instances, ejected per anum and by vomiting; the urine was dark and turbid, as if clotted blood was dissolved in it; the pulse feeble; some had epistaxis, others blotches, which receded and reappeared on the surface, as if stung by nettles, and many became suddenly yellow. As the disease proceeded there was an evening exacerbation with intolerable heat of skin, and morning remissions with a profuse and useless sweat, the skin remaining hot; at length the exacerbation was succeeded by collapse, with hurried and anxious respiration, a

The south-west side is more plain and regular than towards the north-east, where the hills are higher, with low marshy valleys ; the whole tract unhealthy to man and beast. Near the towns and villages the fields are well cultivated, but the rest is generally rocky or woody. There are some pools of standing water, but few rivulets : the soil is light and thin, and in most places there is so little earth that the island appears to be one large irregular rock ; covered here and there with mould and stones. It is not only proper, however, for vineyards, but produces wheat and barley, though the crops are often injured by excessive droughts.

The air is seldom darkened with thick fogs, though the low valleys are not free from mists and unwholesome vapours. The summers are dry, clear, calm and very hot, with night dews ; the autumns moist, warm and unequal. In winter the storms are neither frequent nor long, and whenever they cease the weather returns to its usual serenity. The spring is always variable, and bears a stronger resemblance to the winter than summer. The thermometer throughout the year seldom rises within doors much above 80° , or falls below 48° : in extraordinary years it has been observed to rise to 87° , and fall to 41° . In summer there is seldom 4 or 5 degrees difference between noon and night, and in winter the variation is less considerable. In the dog-days the heat, in open places where there is a free circulation of air, seldom exceeds 98° .

The winds about the equinoxes, and sometimes in winter, are very boisterous. During summer, in the morning and evening there is commonly a

perfect calm; the middle of the day is cooled by breezes, which rise in the east, and following the course of the sun, increase till two or three o'clock, and die away as night approaches. If they intermit for a day, the natives grow languid and inactive from the sultriness of the season. North winds are in general cold, dry and healthy, dispelling mists and making a clear blue sky; while those from the opposite points render the air warm, moist and unhealthy. The north and north-west winds are frequent towards the close of winter and in spring, and being cold and dry, often injure vegetation. The north-east blow in piercing blasts at the same season, but are moister, and often attended with rain. South and south-east winds are the most unhealthy, and in whatever season they blow, the air is foggy and affects the breathing; but in summer they are sultry and suffocating, producing an excessive dejection of spirits, and the thermometer in the sun frequently rises to 100°. The west wind is usually drier than the south. The east, cold and blustering in spring, and sultry in summer.

About the autumnal equinox a sudden alteration in the weather ensues; the sky is darkened with clouds, and the rain falls in great quantity, mitigating the excessive heat, checking epidemical diseases, and softening the sun-burnt earth, attended by thunder and lightning, and squalls of wind from the north.

The progression of diseases is as follows:

Towards the end of June, young children, "who suffer first by excessive heat and cold," are attacked

with vomiting and purging, and a periodical fever, often erratic, without any fixed type. In July, Tertian fevers appear among persons of all ages, and increase daily till about the autumnal equinox, when they rage with the greatest fury among all classes; then gradually decline, and as soon as the winter begins few are infected, though some primary fevers continue to January, and relapses are very frequent in the latter months of the year.

About the time when the Tertians begin, the Cholera, the Rash (*Sudamina* of the Romans, *Lichen tropicus* of Bateman), and the Essere (*Urticaria*), become epidemic in a less degree, but seldom continue beyond September, while the Tertians last till winter. Diarrhoeas, Dysenteries and Tenesmus are also epidemic in summer and autumn, but in some years they are infrequent, and in others as numerous as the Tertians.

Cleghorn remarks, that there seems to be "a near alliance amongst all these diseases. Those who have the *Rash* or *Essere* to a great degree are very liable to Tertians, and in the paroxysms of those fevers these eruptions are apt to break out. Cholera sometimes hath its regular periods like a Tertian, as the paroxysms of Tertians are frequently attended with a Cholera. A Tertian is sometimes changed into a Dysentery, or a Dysentery becomes a Tertian, and when one is suppressed the other often ensues: nor is it uncommon for Dysenteric fevers to put on the form of Tertians, and for the fits of Tertians to be regularly accompanied by gripes and stools. Both Dysenteries and Tertians, without any manifest cause, are sometimes more

universal and severe in one part of the island in one year than another, and often seem to attack particular families with uncommon severity, whilst others in the same place and circumstances escape. Those, however, who live in low valleys, or near stagnating corrupted waters, are commonly the greatest sufferers."

As the Tertians and Dysentery decline, the Pleurisy begins, rages sometimes with great violence towards the close of the year, and lasts till April.

In order to exemplify this progression of disease, and to show the variableness in the prevalence of either, I shall rapidly trace the epidemics of the five years noticed by Cleghorn. He divides the epidemics into the summer and winter fevers; the summer commencing in June, and ceasing about January; the winter in November, and lasting till the summer solstice; "so that the one seems to be the offspring of excessive heat, and the other of the sudden cold from the north winds." The summer make up two thirds or three fourths of the whole annual diseases, attacking all persons, while the the winter ones are less injurious to the English than the Spaniards. The diseases of the summer and autumn, like the weather, are regular, while those of the winter and spring, like the variable disposition of these seasons, are less uniform, being in some years more frequent in one month, and in other years in another. Of the summer diseases, the Tertian is the chief, while the Pleurisy is the predominant one of winter; the last being generally "the chief among vernal epidemics, as the other is constantly amongst the autumnal."

1744. In July Tertians were numerous, but in August and September were not so universal nor malignant as usual, though obstinate relapses were met with till January. About the equinox, Dysenteries of a bad kind began to appear, and soon increased to such a degree that it was doubtful whether they or the Tertians were most universal. Most of those attacked died about the winter solstice, or sooner; the remainder, like so many shadows, did not recover till the ensuing summer*.

In December some were cut off by the Pleurisy.

1745. Towards the close of January a manifest alteration to the better was observed in the sick; those who had been reduced to the last extremity by repeated relapses of Tertians were restored to their former health, and those ill of Fluxes began to show signs of recovery; nor did any new disease, except a few Pleurisies, appear during the spring.

Towards the beginning of June, heavy rains having occasioned a sudden change from heat to cold, some were attacked with looseness, gripes and colic pains; others with Angina; and by the end of the month, Tertians and Cholera began; came to their height in September, and disappeared after the winter solstice, being often attended with fixed pains in the side, and sometimes spitting of blood.

* Cleghorn supposed this Dysentery was owing to sour wine. I may remark that he ascribes a contagious quality both to Tertians and Dysentery. In speaking of the former, he says, they "have as good a right to be called contagious as the Measles, Small-pox, or any other disease; for although in that season (July) there certainly is a peculiar disposition in the air to affect numbers in the same way, yet those who are much conversant among the sick are most liable to catch the distemper." p. 132.

In July and August, a slight Jaundice, without fever, was common. In September some Dysenteries appeared, and continued till the winter. As they and the Tertians disappeared, the Pleurisy, which had been fatal to a few in the autumn, became more frequent, and towards the close of the year raged more violently than usual, at least among the English.

1746. The Pleurisy was very fatal till April, when it began to abate, and it disappeared about the summer solstice. Equally fatal with it were Phrenitis and Paraphrenitis, and an erysipelatous fever. A few had large parotids, and others inflammations of the throat.

Chincoughs became frequent among children in March, and continued till summer. They had no sooner disappeared, than a periodical fever, with vomiting and purging, arose, and proved fatal to many children during the summer.

In July, Tertians broke out as usual, and, rendered violent by the excessive heat, were fatal to many about the seventh day; but the cold weather of September checked them, and about the end of October they gave way to Catarrhs and Quartan agues.

1747. The first part of this year produced some few Intermittents, and inflammatory and Catarrhal fevers. The extraordinary heat of May ushered in the summer diseases sooner than usual, for towards the end of it Cholera carried off many children; and in June Tertians became universal; and by the close, Diarrhœa, Dysentery and Tenesmus broke out, and raged violently for some weeks,

but ceased to be epidemic after the beginning of September. As the Dysenteries decreased, the Tertians were multiplied, and being of a malignant kind, great mortality ensued. At the latter end of the year, Pleurisies arose, and, as usual, affected the Spaniards more than the English.

1748. Pleurisies were very fatal in the beginning of the year, and to some in the spring. About the 10th of April a Catarrhal fever arose suddenly, and raged so universally for three weeks, that almost everybody in the island was seized with it. The feverish symptoms went off generally in two or three days with a plentiful sweat, while the cough and expectoration continued some time longer. In some plethoric persons it terminated fatally in a Pleurisy or Phrensy; and in one or two, after the loss of an incredible quantity of blood *per anum*.

Many children died of Cholera and periodical fevers during the summer, while others had various cutaneous eruptions. Tertians prevailed from July to the end of November; and Dysenteries attacked the lower sort of the natives in Ciudadella, whose bread was made of damaged wheat; those who lived on better provisions escaping them.

From the end of November to the middle of January, Pleurisies were predominant in all parts of the island; and large critical abscesses, with various cutaneous eruptions were unusually frequent both among the Spanish and English.

1749. In March Pleurisies and Catarrhal fevers occasionally appeared; and in June and July, a few specimens of the summer diseases.

An attentive consideration to the character of

each of these years, and to the degree and occurrence of its diseases, shows how much their early or late appearance, their prevalence, mildness or severity, depended upon temperature; not perhaps so much on that existing at the moment, compared with the temperature of the same period in other years, but on the impressions made by the present temperature as compared with that of the preceding month or season. The early development of the summer's heat brings on the diseases of the season prematurely, and they decline with the first colds of autumn; while the average temperature renders them later in their rise, and protracts them till the winter. This is seen in the Tertians of 1747, which came in with the unusual heats of May, and disappeared in November; while in 1745 they began at the end of June, and lasted to the winter solstice. In 1747 the Dysentery came on early in June, and was checked by the cold of September; while in 1744 it began in September, and ended with the close of the year.

The idea, which was strongly suggested to the mind by the examination of the diseases of America, that Cholera and Dysentery were modifications of Marsh fever, is confirmed by the epidemics of Minorca; for they not only exist with Tertians in ordinary years, coming in and going out with them, but very often when one declines, the other rises in prevalence and intensity. In 1744 the Dysentery, at least in malignity, surpassed the Tertian fevers; and in 1747 it for a while appears to have held an equal career with them till September, when the Dysentery declined, and the

Tertians raged with increased virulence. The facts from which this affinity between Dysentery and Marsh fever is inferred, are their simultaneous appearance in the same place, the existence of the febrile and the dysenteric symptoms in the same person, or the paroxysms of fever being attended with the pain, tenesmus and stools of Dysentery, or Dysentery having periodical returns like those of the fever. Sometimes it would seem that an obscure individual predisposition determines the dysenteric modification; that is, that the same apparent causes operating equally on all, give rise to fever in the many, and to Dysentery in the few; at others, particular causes, like sudden cold and damp, or bad food, excite Dysentery in a majority of those exposed to them. This appears to have been the case in 1744, when the unusual occurrence of north winds and damaged sour wine, gave a prevalence to Dysentery; and in 1748, when damaged bread gave a tendency to the poor of a particular village to its attacks.

The only document afforded by Cleghorn on the temperature of Minorca, is a Table showing the greatest, least and mean height of the thermometer at 3 P. M. in each month. I shall quote the mean height, to show the difference in the different years, commencing with May, as the earliest month in which the annual epidemic begins.

MEAN HEAT AT 3 P.M.

	1744.	1745.	1746.	1747.	1748.	1749.
May	—	68°	68°	71°	68°	68°
June	—	73	73	76	75	74
July	76°	77	80	79	79	82
August	77	77	76	80	79	
September	73	74	67	72	73	
October	68	65	58	65	65	
November	56	58	57	60	58	
December	51	53	56	58	57	
	1745.	1746.	1747.	1748.	1749.	
January	52	52	55	51	55	
February	55	51	55	55	—	
March	59	54	54	55	—	
April	61	59	61	61	62	

PRINCIPAL EPIDEMICS.

DYSENTERY.

1744. September to December, very fatal.
 1745. September to winter, a few.
 1747. End of June to September, raged violently.
 1748. July to November, at Ciudadilla.

TERTIANS.

1744. July to January (less in August and September).
 1745. July to December.
 1746. July to the end of October.
 1747. June to November, malignant.
 1748. July to November.

PLEURISY.

1744. December. A few in spring of 1745.
 1745. December to April 1746, very fatal.
 1747. December to spring, very fatal.
 1748. November to January 15th, very general.
 1749. March, occasional.

It will be seen by this Table that the temperature of 1747, from May, was greater than the preceding year, with the exception of July, and that January

1748 was four degrees colder; and we find that its epidemics were aggravated both by the heat of the spring and summer, and by the cold of winter. Tertians were universal in June, but from the end of June to September Dysentery raged violently, and as it decreased, the Tertians were multiplied and of a very malignant kind. Pleurisies arose in December, and were "exceedingly mortal in the beginning" of 1748.

A comparison of the epidemics of Minorca with those of the State of Delaware, as described by Dr. Vaughan, (vol. i. p. 403,) will show how exactly the diseases of these two countries agree with regard to season, succession and associated circumstances. We find in each Urticaria, prickly heat, Cholera, Dysentery, Intermittent, Remittent, Continual fever, and Pleurisy or Peripneumony, succeeding each other; and while the temperature of the winter of Delaware must differ essentially from that of Minorca, it is interesting to observe that in both situations the Pleurisy seems to prevail most in those months where the temperature changes perceptibly from heat to cold, or the reverse; that is, it appears sometimes at the beginning of winter, then intermits in its attacks, to reappear as winter is passing into spring. Cleghorn says it is more the disease of the natives than the English, which is perhaps explicable from the climate of the winter of Minorca being more analogous to the average temperature of Great Britain, and therefore comparatively the winter months are seasonable to the English residents. They suffer most from the heats of summer, and the Tertian fever in them some-

times rises to the height of Yellow fever; but the natives, habituated to a high mean temperature, living on a poor diet, and perhaps more exposed to the influence of malaria, suffer most from the cold of winter; and while the summer fevers in them are of a lower degree of intensity, like the natives of the Southern States of America, they often perish of the winter or spring Pleurisy. Dr. Williamson (vol. i. p. 343.) shows the tendency of the natives of North Carolina to this disease, and refers it distinctly to "low sunken grounds" and to persons subject to Intermitting fevers; a locality which accounts for the symptoms of Marsh fever attending it, and which are as perceptible in the Pleurisy of Minorca as in that of America.

As it is important to establish the relationship between the effects of malaria at Minorca and those in corresponding latitudes of America, and to give place also to the epidemics of Cleghorn in this sketch of the fevers of Europe, I shall as briefly as possible notice some of his observations.

His remarks on the Marsh fevers of Minorca are of a general nature, and all comprised in his chapter on Tertian fevers, of which he enumerates several varieties, as to the forms of their periods, or their more obvious symptoms. "They are called Tertians," he says, "because each particular period or revolution of the disease is completed in the space of forty-eight hours, and a new attack is begun on the alternate days, or every third day. He divides them into *Simple*, *Double*, or *Triple*. The Simple Tertian has one fit and one interval during each period. In the *true Simple* the fit does not exceed twelve

hours, comes on in the middle of the day, and goes off the same evening; but in the *spurious*, it comes on much earlier, and lasts above eighteen hours.

“The *double* Tertian has two fits and two intervals in each period, but the one differing from the other as to the hour of invasion, its duration, or the nature or violence of its symptoms: thus the first fit is like the third, and the second like the fourth. Some begin in this way: On Monday evening a slight fit comes on, and goes off early the next morning. On Tuesday, towards the middle of the day, a more severe fit begins, and continues till night. On Wednesday there is an interval till the evening, when a slight fit comes on and goes off as that of Monday did. That interval is most considerable which follows the severe fit, for the slight one oftener ends in a remission only, and frequently lingers till the next comes on. The strong one often comes on a little earlier in each period, while the slight one returns at the same hour, or later and later every other day. The *true Double* has a fit not exceeding twelve hours: the *spurious* has a longer one, and in the *Subintrant* the fits are so protracted that one is scarcely ended before another begins.

“The *Triple* Tertian has three fits and three intervals in each period, and of this Cleghorn makes two varieties; one the Semitertian of Hoffman, less common; and the other that of Celsus and himself, which is very frequent.

“That of Hoffman has a fit on Monday at noon, which goes off at five or six o'clock: a few hours after, another fit begins, and continues till morning. On Tuesday there is an interval till the evening,

when a fit comes on and lasts most of the night. On Wednesday there are two fits, as on Monday; and on Thursday one like that of Tuesday: and thus the fever goes on with a double fit on the *odd* days and a single one on the *even* days.

"That of Celsus has a fit on Monday at noon, which goes off at night. On Tuesday afternoon another comes on, and gradually increases till Wednesday night, when it terminates. On Thursday afternoon a long fit, like that of Tuesday, comes on, and returning every other day, leaves only a short interval of ten or twelve hours during the forty-eight.

"These various kinds of Tertians differ among themselves according as their *intervals* are more or less tranquil. They are *Intermittents* when there is a complete apyrexia in the interval, *Remittents* when the apyrexia is imperfect or obscure, and *Continual Tertians* when the paroxysms and the intervals are less perceptible, though the violence of the symptoms is somewhat abated on the alternate days. These malignant fevers, in which the fits and intervals cannot be distinguished, yet belong, to the Tertian, as at first the periods are distinct; and when the violence of the symptoms abates, they again become more regular, and assume their former or analogous types. Many Tertians which intermit during the first week are apt of their own accord to become Continual fevers in the second, and to extend to the seventeenth or twenty-first day, or longer, before an intermission is again perceptible. In July the type is commonly simple and regular, the fits short, and ceasing after the third, fourth,

or fifth periods. As the season advances they become more dangerous, often terminating in those malignant forms, the *Syncopalis*, *Lipyria* and *Assodes*, &c., especially if much rain falls in the dog-days without wind. About the equinox they assume a great variety of forms, and often counterfeit Continual fevers, with long redoubled paroxysms. But toward winter their type becomes more simple, and though tedious and obstinate in cold weather, they are more regular and less dangerous than in summer.

“The true simple or double Tertian, and the Semi-tertian of Celsus, are the most frequent. The symptoms vary extremely. They often begin with a slight shivering, at times without any sense of cold; and often while the patient complains of cold, the skin is warmer than natural: an intense or a moderate degree of heat succeeds. Occasionally they terminate by stool or urine rather than by sweat, and sometimes are so complicated, with fixed pains in the head, chest, belly, back, or limbs, as to personate a phrenzy, Pleurisy, Hepatitis, Lumbago, or Rheumatism, especially if the apyrexia be imperfect. Sometimes one or two symptoms so predominate that the rest are obscured or totally eclipsed: hence we meet so often with Hemicranias, Choleræ, Dysenteries and Chincoughs, returning regularly at stated periods; and names have been given from some predominant symptoms, as *Lipyria*, when the cold which ushers in the fits continues long and so intense that the surface is chilled while a burning heat is felt in the bowels; *Syncopalis*, when the anxiety and dejection of mind, commonly in the first stage, is so aug-

mented as to induce syncope; *Aesodes*, when restlessness is induced by exquisite pain and heat in the bowels; *Elodes*, when the skin is constantly covered with sweat: but so variable are these fevers, that it would be endless to give names to their changes and varieties.

“Most of them commence as true simple or double Intermittent Tertians. The cold fit seldom lasts above an hour or two, and as it goes off some bilious matter is commonly discharged by vomit or stool, an intense heat, as high as 103° or 104° , succeeds, till a profuse sweat puts an end to the paroxysm. In the apyrexias the patient generally complains of a disagreeable taste, loss of appetite, headache, pain in the back and pit of the stomach on a full inspiration. The pulse during the intermission is almost natural, varying in the fits according to the predominant symptoms; small and obscure in acute pains of the præcordia, indicating greater weakness than really exists; natural in drowsy lethargic symptoms, though there is then the utmost danger. The urine in the fit or interval is always clear, frothy and of a deep red; the blood commonly florid, not sily, with copious yellow or oftener red serum, like *lotura carniū*, or the whole blood in one lax gelatinous mass.

“As the fever advances to its height the coldness and shivering, which usher in the fits, become less or entirely imperceptible, in which case, a Cholera or acute pains in the back or limbs supply their place. These pains, with or without rigor and chilliness, are sometimes so intolerable as to prompt persons to commit suicide, though they pass away.

as the hot fit advances. Frequently the shiverings are intermixed with flushings of heat. In the mean time the fits become longer, and bring on headache, raving, sopor, apoplexy, epistaxis, cough, difficulty of breathing, palpitations, irregularity of pulse, sickness, anxiety, pain about the upper orifice of the stomach, vomiting and purging, heat, tension, pain and pulsation in the abdominal viscera, subsultus, and a variety of other symptoms which do not entirely cease with the sweat that carries off the fit, so that the apyrexia is not only shortened, but rendered more obscure.

“It often happens that from the second to the fifth period, the simple becomes a double Tertian, or the double a Semitertian; or the fits change their hours, and come on unawares, without any previous cold; and in this way they vary their character, producing longer, more severe, and more frequent fits, till they reach their height, when both fit and interval are scarcely to be distinguished; and if not fatal, they then become regular; and after one or more slight fits, go off of their own accord. Those which come to their height at the third, terminate on the fourth or fifth period; those at the fourth, on the fifth or sixth; and others at the fifth, on the sixth or seventh period; the crises happening on the odd or even days, as the severe fits come on the one or the other.

“If the fever increases to the seventh period, it probably will not cease before the ninth, though Intermitting or Remitting Tertians rarely run to so great a length. A few *Continual* ones, which begin mildly and slowly increase, break out violently in

the third or fourth week, and soon after end in Intermittents, though some have continued without any considerable intervals for six or seven weeks, and such are apt to end in Dysentery, Lientery, or Tenesmus.

“It is more common to meet with Tertians which set out furiously, with severe subintrant double paroxysms, so that for some days they have little or no interval: on the third or fifth day a profuse sweat commonly brings on an intermission, and the disease then assumes the type of a double Intermitting Tertian, or a Semitertian. These often end spontaneously on the seventh, ninth, or eleventh day, and are less to be feared than those which begin deceitfully, as a slight double or simple Tertian. So that however mild these Intermittents may at first seem, they are not to be trusted till they have gone through three or four revolutions; when, if the fits are not attended by acute pains in the viscera, nor last over twelve hours; if they decline with plentiful warm sweats, have free intervals, and the appetite begins to return; if small pustules break out in the mouth, or scabs about the lips; if the urine be natural, or cloudy and turbid, depositing a white or pale red sediment, we may prognosticate recovery.

“But, on the other hand, at this period of the disease it denotes danger when the fits are protracted, or accompanied with delirium, coma, anxiety, pain in the loins or upper orifice of the stomach, aversion to food, inability to walk, from feebleness and vertigo, when the hypochondria and epigastrium are swelled, hard and painful, when blotches like the stinging of nettles frequently break out on

the skin, when the urine continues thin, clear, high coloured, or covered with an ash-coloured, cobweb-like membrane, when evacuations more than the strength can bear, come on, as vomiting, purging, epistaxis, sweats, &c.; for fevers with these appearances are often changed to mortal Dysenteries, or they become Continual, and run out to a great length; though generally they preserve the form of Remitting or Intermitting fevers, and daily growing stronger, prove dangerous about the sixth or seventh period; and though the patient may escape by some crisis, as purging, sweating, parotids, or abscesses near the hip, yet his constitution is so shattered that he long continues exposed to irregular paroxysms, night sweats, fluxes, obstructions of the viscera, and chronic disorders.

“ But the utmost danger is to be apprehended *if a few drops of blood fall from the nose; if black matter, like the grounds of coffee, is discharged upwards or downwards; if the urine be dark, and of a strong offensive smell; if the whole skin be tinged of a deep yellow, or discoloured with livid spots or suffusions; if during the whole fit he is cold and chilly, or becomes extremely hot, speechless and stupid, sighs frequently, groans or has hickups, lies constantly on his back, with his eyes half shut, belly swollen, with obstinate costiveness, or involuntary stools. That stage of the fit which is usually got over with the most difficulty will probably in the end prove fatal. Some expire in the first stage, with the skin chilled, cold sweats, small irregular pulse, and senses entire; but most die in the height of the hot fit, stupefied, senseless,*

breathing short and laborious, and in a burning, fiery sweat."

The above is an abstract of Cleghorn's report of the Tertians of Minorca ; and on the supposition that malaria is the remote cause of these fevers,—a supposition justified by the almost universal consent of medical men,—how, in the present state of our knowledge, are we to explain the variable effect of this one remote cause, otherwise than by attributing the different impressions made upon the body either to the variable nature or amount of the remote cause, or to the state of individual predisposition ?

With the bias on my own mind as to the identity of cause in the epidemics of every latitude, I naturally look with a high degree of interest upon those forms of fever in the lower latitudes which approximate in character to those of the higher ; and it requires no ingenuity to perceive, even in countries where the periodical form is the great characteristic of Marsh fever, that a close approximation to the continued type is found, either arising out of the Intermittent or Remittent, or preceding them in the order of development. This association of the periodical with the continued type, in southern latitudes, may be said to separate the latter in nature from the more unmixed Continued fever of more northern latitudes ; but it will be found, on a patient and unprejudiced investigation, that this compound character of Marsh fever is natural to it, and that while in climates of a high mean temperature the periodical form of fever is the leading feature of its epidemics, and

the continued type an accidental aggravation ; in climates of a lower mean, the continued form is the prevailing type, and the intermitting or remitting forms are either the occasional types of their summer or autumnal fever changing to the continued form, or the ultimate modifications of an epidemic Continued fever at the period of its decline. If, therefore, at Minorca, the Intermittent Tertian sometimes passes to a Continual Tertian, in which all distinct traces of the fit and interval are lost, or if a Continual fever begins violently, with severe double subinfrant paroxysms, which breaks sooner or later into a distinct Periodical fever, and these be exceptions to a general rule, it should be admitted, in more northern latitudes, that examples of an Intermittent or Remitting fever passing into a more distinct Continued fever, or a Continued fever breaking occasionally into an Intermittent or Remittent, which are equally exceptions to a general rule, afford some grounds for inferring an analogy as to the nature and to the cause of the fevers of both countries ; and that the difference of temperature may be concerned in the opposite effects produced in the modifications of the general type of the fever of each country.

The observations of Cleghorn as to those fatal prognostics of Tertian fever in Minorca, which embrace the distinct peculiarities of the Yellow fever of the West Indies and North America, viz. "that the utmost danger is to be apprehended if a few drops of blood fall from the nose, and if black matter, like the grounds of coffee, is discharged upwards and downwards, and if the whole skin be

tinged of a deep yellow," are of themselves quite sufficient to establish the endemic origin of this formidable variety of Marsh fever; and if a few cases occurred at Minorca in an epidemic having generally a milder character, it only affords a very instructive example of an occasional modification existing in a few, which in other places we sometimes see prevailing as an epidemic in the many. He says that the English were more subject to become yellow in these fevers than the natives; but he does not affirm that the other symptoms of Yellow fever were more common in them, though the combined causes of this disease in the Southern States of America would lead us to infer that this was probably the case.

The *Cholera infantum* is not particularly noticed by Cleghorn, but it seems, as in America, to have preceded the other epidemics. He says, "by the end of June, young children, who constantly suffer first by excessive heat or cold, are attacked with a vomiting, purging, and periodical fever, often of the erratic kind, without any fixed type." I have not met with any mention of this disorder in other writers, and therefore suppose it has been included in their general account of Cholera. It is one of so formidable a character, and such frequent occurrence in the summer of North America, however, as to have excited the attention of medical men there.

The adult Cholera appears to come in with the Tertians, but not to prevail generally after September. Like the Dysentery, it exists as a separate disorder, sometimes returning periodically, or as a

symptom of Tertian fever. Cleghorn says, when periodical in its returns, it is to be cured as Tertians are. As a symptom of the Tertian, it is more dangerous when it attends the fits about the third or fourth period than in the beginning of the fever.

The Dysentery at Minorca began in three ways: first, as a simple diarrhœa, followed by severe gripes and bloody stools; secondly, by horrors, rigors, and the feverish symptoms which usually attend the first attack of acute diseases, followed by a painful and frequent evacuation of slime streaked with blood; and thirdly, no fever preceding, by a twisting of the guts, which draws the bowels into knots, and by acute fixed pains in some part of the abdomen, instead always of griping pains, which shift from place to place, and come at intervals. Some patients are tormented with stitches about the bastard ribs, interrupting the breathing, as in Pleurisy; others, by a pain reaching from one hypochondrium to the other, cutting them as it were in two, or by a pain in the pelvis, with a constant fruitless straining to stool, with costiveness, or discharges of a bloody slime.

But in whatever way it begins, the case in process of time comes to be pretty much the same: the intestines are irritated, inflamed and ulcerated; a fever, for the most part of the periodical kind, comes on; the flux increases, becomes more ichorous and offensive; the strength decays, and death, or a tedious recovery, is the consequence.

The report of the morbid appearances in this disease and the Tertian fever is too vague to afford any precise information. In the fever, "one or

other of the adipose parts of the lower belly, as the cawl, mesentery, colon, &c., was constantly found of a dark black complexion, or totally corrupted; the gall-bladder full and turgid, the stomach and intestines overflowing with bilious matter, the spleen large, and so excessively soft and rotten, that it had the appearance of congealed blood wrapt up in a membrane. In the head and chest, nothing extraordinary was met with, except yellow serum, when the skin was of that colour."

In fatal cases of Dysentery, "the great guts were constantly found either entirely mortified, or partly inflamed and partly mortified, the rectum generally most affected; scirrhus tubercles, sometimes straitening the cavity of the colon in several places; in a few, small abscesses in the cellular membrane of the peritoneum, contiguous to the colon and rectum. Sometimes the small guts were sound, but more frequently their lower part was inflamed; the convolutions often connected by membranes. In two persons, the omentum was almost entirely wasted, the small remains of it being quite black, while purulent water was found in the abdomen; in several it was inflamed, and adhered to the guts and peritoneum; the gall-bladder, for the most part, full of dark bile, and the spleen more or less in a putrid condition."

Clegborn says, that the great similitude there is in many respects between Tertian fevers and Dysenteries induced him frequently to use bark in the last; and when the fever and gripes were regularly exasperated, either every day or every other day, at stated periods, it has often effectually put a

stop to both, especially if the exacerbation began with chilliness, and terminated in sweats. At other times it removed the fever, the flux continuing without much alteration.

In the above detail of the summer diseases of Minorca there is no fever described like the common Inflammatory endemic of Malta, a fact which I can only explain by supposing that, from the general influence of malaria, as indicated by the prevalence of Tertians, the common causes which give rise to the former disease acted generally as exciting occasions of specific fever; and that this in unseasoned constitutions, under the stimulus of a high temperature, rose occasionally to the grade of Yellow fever, a disease which we know is the product of malaria and high heat. Cleghorn's observations, however, would warrant the supposition that the common Inflammatory fever was met with in Minorca, but certainly not to the extent, nor so distinctly characterized as in Malta, or he would have noticed it. In speaking of the summer and winter fevers he says that "both of them, and almost all fevers which happen in that climate, whether primary or symptomatical diseases, may be termed periodical, having remissions at intervals more or less considerable; but those of the summer *generally* assume some one of the tertian types."

The idea that heat, from the general existence of malaria, acted as the exciting cause of Marsh fever, is strengthened by the circumstance that cold appears to have acted in the same way by inducing Pleurisy, evidently a modification of Marsh fever, like that of the Middle and Southern States of

America. This disease was the predominant one of the winter and spring at Minorca, and "less injurious to the English than to the Spaniards." The winter fevers, though they often counterfeit Tertians, especially in the beginning, yet for the most part have exacerbations equally strong every day, coming on about noon, with or without cold shiverings, and terminating towards morning, sometimes with gentle sweats, or without any sensible evacuation.

This Pleurisy, so called from the pains in the side, Cleghorn remarks, ought rather to be termed a Peripneumony. It was excited by the cold of winter and spring, especially in the peasants, "whose houses, commonly built on rising ground, are not so well adapted for keeping out the piercing cold of winter as sheltering them from the summer heat, so that particular corners of the country have been almost depopulated, while the towns and villages have escaped any remarkable mortality.

"The disease began commonly like an ague fit, with shivering and shaking, flying pains over the body, bilious vomitings and purgings, followed by feverish symptoms. In a few hours the respiration became more difficult and laborious, most of the sick being seized with stitches in the side, striking upwards to the clavicle and shoulder blade, or downwards along the cartilages of the bastard ribs, or across from the breast-bone to the dorsal vertebrae, so that cough and inspiration were very painful. Many complained chiefly of a load and oppression at the breast, or of a heaviness and fluttering about the heart, which at one time seemed to glow with great

heat, at another to be chilled with cold, as if dipt in ice-water; and in a few these complaints preceded the fever, or did not come on till the day after.

“ In the progress, the pains moved about in the chest, or shifted from the breast to the limbs, and of a sudden returned to the bowels, or, leaving one side, attacked the other unexpectedly, and proved fatal in a short time. Out of 60 patients, 42 had the right side affected; but whichever side was the seat of the disorder, the sick lay easiest on the opposite, though most were obliged to lie on the back, or sit up in bed. Many were drowsy and inclined to sleep, but they raved at intervals, or were disturbed by dreams. Some laughed in their sleep, others would wake in a fright, and start out of bed with some imaginary terror. In several the external heat was moderate, or less than natural, but for the most part so intense as to raise the thermometer to 102° or 104° . The pulse was very variable even in the same person, and was most obscure in the arm of the pained side; natural, or even slower than natural, when there was the greatest danger. The colour and consistence of the blood also were not to be trusted. In many it had a white or pale yellow crust, the serum of the same complexion, but for the most part it was red and florid, changing its appearance, however, in the space of a few hours, having a crust in the morning, and none in the afternoon, or the reverse. Beside some abatement of the fever, which commonly happened every morning, it was remarkable that on the third day, or beginning of the fourth, there was frequently a great remission, sometimes a total

cessation, of every violent symptom, so that the sick were thought to be out of danger. But on the fourth or fifth, a delirium suddenly came on, or the breathing became more difficult than ever, and one or both of these symptoms increasing hourly, the patient expired in a day or two, either suffocated or raving mad; unless, nature or art assisting, he escaped by means of a plentiful expectoration without hard coughing, or a copious discharge of urine, or sweats. It sometimes happened that the remarkable remission fell out on one of the days between the fourth and seventh, in which case the exacerbation succeeded on the following day.

“ Out of 24 fatal cases, 4 died on the fourth day, 3 on the fifth, sixth, seventh, eighth, 2 on the eleventh, 1 on the fourteenth, and the remaining 2 on the fourth or fifth; and if any survived the seventh day, it seemed owing to bleeding.

“ A copious expectoration was the most frequent of the critical evacuations, and, when early and free, it kept off or mitigated the dangerous symptoms so liable to come on about the fourth or fifth day, and the fever disappeared about the seventh; but if it did not begin before the exacerbation of the fourth or fifth day, it often was insufficient to save the patient; or, if he did recover, the fever seldom left him before the fourteenth, or much later. The critical urine turned thick soon after being made, and was either of a pale red, depositing lateritious sediment, or milky, as if mixed with pus, depositing an equal smother white sediment. Sweats were common, at first oftener symptomatic

than critical, but after the obstructions of the head and chest were removed by the above evacuations, they seldom failed to come on and abate the fever, and complete the cure. Though they did not always fall on the critical days, yet it is remarkable that those which were most profuse, and productive of the greatest changes, happened on the fourth, seventh, ninth, eleventh, fourteenth, seventeenth, and twenty-first days much more frequently than on others. It was common for these diseases to begin with a vomiting and purging of green or yellow bilious matter.

“The examination after death showed that the lungs were principally affected, and that the pleura was in several perfectly sound. In many the lungs were converted into a hard liver-like substance; abscesses, with a sanious ichor and a rotten gelatinous substance, were frequently found, even in those who died by the fourth day, either in the lungs; or between them and the pleura, where they adhered, or between the membranes of the mediastinum, near the diaphragm. The lungs floated in purulent serum, the pleuræ having a white crust, like melted tallow, deposited on them. Sometimes the pericardium had the same effusion and crust, the diaphragm inflamed; and in two persons the sinuses of the dura mater were distended with blood, the membranes inflamed and thicker than natural. In one, supposed to have died of the Pleurisy, the lungs and pleura were sound, but the diaphragm was inflamed, and a large abscess found in the right lobe of the liver, which had discharged itself into the abdomen; part of the colon and

teguments near the liver being sphacelated, the rest of the guts inflamed, and adhering to each other."

Cleghorn found that large and repeated venesections were the only means of successfully treating this disease, abstracting from forty-eight to fifty-four ounces of blood within the first twenty-four hours; and if this depletion did not ward off the head affection, which was apt to supervene, he drew again from twelve to twenty-four ounces, either by the lancet or cupping, and to this he added purgatives, blisters, &c.

It is evident from his account of these winter fevers, that several diseases are included in them, as Pleurisy, Peripneumony, acute Bronchitis, Hepatitis, &c. &c. That in some cases the influence of malaria was particularly observable; is evident from the daily exacerbations, the remarkable remission on the third or fourth day, the sweats frequently occurring on the critical days of Marsh fever, the presence of bilious vomitings and purgings, the yellow serum and lymph in the blood, the drowsy tendency of many patients, the disturbed sleep and delirium, and the very variable state of the pulse in the same individual, all of which are characteristic of specific fever.

Dr. Font, who had resided many years at Ciudarella, informed Cleghorn that this disease was met with every winter, and that when that season was unusually prolonged, it extended to the middle or end of the spring; that it was often accompanied by a fever, "*quæ periodicè remittit et intenditur, modo quotidie, modo de tertio in tertium. Et aliquando sola febris Tertianæ Intermittens adest, sicuti obser-*

vavi in quatuor ægris, quorum unus in initio septimi, paroxysmi e vitâ decessit." He also treated the disease by large and repeated venesections.

The great benefit derived from venesection in the Pleurisy of Minorca is the only circumstance which distinguishes it from the disease of North America, and which implies a more decided inflammatory character, the inflammation attacking the lungs or pleura; while in America the disease in many places puts on the character of *Peripneumonia notha*, and is cured rather by sudorific diluents, blisters and bark. But Rush, however, speaks of a bilious Pleurisy in the winter of 1794 and 1795, which required copious venesection; and he evidently considered it as a bilious fever, the symptoms of which were modified by the seasons of winter and spring. It will be very instructive for any one desirous of following the variable character of the winter form of Marsh fever, to trace it from the lower latitudes of America, where it distinctly has a periodical type, like that of Minorca, to the State of Vermont, where it seems to coexist with the Spotted fever, and from which it appears only to differ by the impressions of the one concentrating in the chest, and those of the other in the head. The observations of Dr. Hildreth, vol. i. p. 326; of Dr. Forsyth, Ohio, p. 328; of Dr. Williamson, North Carolina, p. 343; of Dr. Pillson, p. 346; of Dr. Pitt, p. 348; of Dr. Vaughan, Delaware, p. 408; and of Dr. Powell and Gallup, Vermont, p. 592, will afford an opportunity of comparing the American disease with that of Minorca; and it will be seen that though under the form of Specific Bronchitis, or

Peripneumonia notha, it is rendered fatal by venesection, yet, from Dr. Pitt's observations, that it sometimes prevails with a sthenic diathesis, attended by local inflammation, in which bleeding is the principal remedy, to be repeated according to the fullness and hardness of the pulse;—in fact, that it is a disease of a very variable character, sometimes highly congestive, and at others inflammatory, the inflammation determined by individual predisposition, and to be treated on very opposite principles when it assumes a bronchial character, or when it attacks the serous and parenchymatous structures.

CHAPTER XI.

FEVERS OF PARIS.

From Pinel.

FROM the above investigation into the character of fever between the latitude $35^{\circ} 54'$ and $44^{\circ} 34'$, it appears that the periodical type is almost universal, and that the nearest approximation to the Typhus of Great Britain is the Petechial fever of Italy, in itself an Intermittent or Remittent Tertian, becoming sooner or later Continued, and as far as present testimony goes, probably exhibiting occasionally the lesion of the glands of Peyer, which Louis considers as pathognomonic of Typhus. In the general character of its symptoms, except the absolute continuity of type, and perhaps a greater degree of irregularity and precipitancy in its progress, it accords with Typhus as closely as the

condition of the natives of the south, with their greater irritability as compared with those of higher latitudes, will admit. But whatever may be the agreement or the discrepancy between them, it is clear that in Italy and along the Mediterranean the Petechial fever is associated with a large proportion of Intermittents, which are the annual endemics of those countries, an association which we do not observe in Britain at the present day.

I shall pass to the consideration of the fevers of Paris, in latitude $48^{\circ} 50'$, confining myself to the "*Médecine Clinique*" of Pinel*, and to the work of Louis on the "*Gastro Entérite*†;" the one affording examples of the multiform varieties of fever, and the other the utmost precision of detail upon Typhus. Pinel limits himself to the consideration of fever as it was presented to his observation in the inmates of the Hospital Salpêtrière, while Louis describes Typhus as it was brought into the Hospital La Charité from various parts of the city, considering as one disease affections known by many different names.

It is to be regretted that the researches of this eminent pathologist have not been extended to the Intermittent and Remittent forms of fever, that we might judge from the same patient and elaborate detail of their symptoms and morbid effects how far they approximate in nature to Typhus. The influence which his opinions are exerting on those who have had the opportunity of studying disease under him,

* Pinel, *Médecine Clinique*, 3rd edit. Paris 1815.

† Louis, *Recherches sur la Maladie Gastro Entérite*, &c. Paris 1829. 2 vols. 8vo.

has led some of his disciples to deny all connexion between the continued and the periodical types of fever; an assertion which seems to be directly in contradiction of one of his cases of Typhus, which arose out of an Intermittent, and to be disproved by his own acknowledged affinity between their symptoms.

The case I allude to is the 44th, under his "*latent typhoid affection*." I shall abridge it, and quote his observations on Intermittents, before turning to the nosological distinctions of Pinel; as the high authority of Louis may, I think, with perfect fairness be adduced in support of Dr. Armstrong's opinion, that Specific fever of marsh origin passes occasionally from the periodical to the continued type: and if it may be justly inferred from his observations, that Intermittents are but a lower grade of fever, having a general resemblance in symptoms and affections of the internal organs with Continued fever, I conceive that this is in perfect accordance with the views of Dr. Armstrong, which I have detailed in the preceding volume.

I do not question the probability of different morbid appearances existing in fatal cases of an Intermittent and Typhus, but I am not prepared to admit that this would authorize the conclusion of their being totally distinct diseases, because I look upon them as the two extremes of the effect of malaria. It would be necessary to observe the pathological character of their intermediate grade, viz. the Remittent fever, and to trace how far it partakes of the one or the other. I am not aware of any observations on the pathology of Intermittents

or Remittents that afford any details comparable to those of Louis on Typhus; and until they are made, the question as to the affinity cannot be settled by an appeal to morbid anatomy.

Louis's work is definitive as to the character of Typhus in Paris, but this may not precisely accord with that of more northern latitudes; for there is reason to suspect that in this country the comparative infrequency of diarrhoea, which is so prominent a symptom of the Parisian fever, is connected with a corresponding exemption of the glands of the mucous membranes of the intestines from ulceration, which Louis conceives to be the essential characteristic of Typhus. If this should prove true, on subsequent comparisons between the Typhus of Paris and other countries, it would afford at least some probability to the idea of fever being essentially modified in its effects; and there is reason to suspect that the Typhus of Paris may present some pathological differences from that of more northern countries, from the circumstance of its being frequently associated with Intermittent fever, which is comparatively rare or unknown in higher latitudes.

The case above alluded to was, that of a young man, æt. 28, who had been employed in agriculture, in the neighbourhood of Paris, ten months previous to his entrance into the hospital on December 20, 1824. He had enjoyed good health till three weeks before his admission. His illness, which had been preceded by a slight cough, began with intense headache, almost total loss of appetite, thirst and rigors, followed by heat and sweat. The rigors came on regularly every day at the same hour during the

first week, then disappeared almost entirely. His stools, after having been suppressed eight days, had been frequent and liquid since the 12th, and he had passed black blood the evening before his admission. On the 21st, his pulse was 75, and in the evening he had rigors, followed by heat, but no sweat, and the same accession of fever took place on the 22nd and 23rd, though a little earlier; and on the 24th he took eight grains of the sulphate of quinia, and no rigor occurred. On the 25th, the motions, which had been regular since his admission, were very frequent. The quinia was momentarily suspended, then exhibited for two days, and abandoned on the 31st. On the 1st of January he vomited bile, and had eight or ten small liquid motions. On the 2nd, the features were somewhat sunk, speech more slow, pulse more accelerated, heat moderate, with infrequent cough, and occasional mucous expectoration. On the night of the 3rd he was seized with acute pain in the hypogastrium, and he died on the 5th.

Tubercles were found in the lungs, and a perforation in the ileum, about eight inches from the cæcum, and the "*plaques elliptiques*" ulcerated: the spleen double its usual size.

Louis was uncertain of the nature of this case until the acute symptoms of the peritoneal inflammation, though, on a reconsideration of it, he thought, notwithstanding the absence of several of the more characteristic symptoms of Typhus, that the disease followed with sufficient exactness its ordinary course. "Sans doute," he says, "elle avait commencé, jusqu'à un certain point, comme

une fièvre Quotidienne : les frissons s'étaient renouvelés huit jours de suite régulièrement ; mais l'appétit ne revenait pas dans les intervalles, des douleurs de ventre avaient eu lieu peu après le début, la diarrhée avait bientôt suivi : ce n'était réellement ni la marche d'une fièvre Intermittente, ni celle de l'Entérite. Les symptômes indiquaient néanmoins une affection qui avait son siège dans l'abdomen : la persistance de la diarrhée, quelquefois seulement interrompue, puis l'évacuation du sang par les selles, la diminution des forces, l'inutilité du régime sur la marche de la maladie, tout cela aurait dû, malgré le peu d'accélération habituelle du pouls, m'arrêter exclusivement à l'idée de l'affection typhoïde."

Though the details of this case are wanting in many of the signs of Typhus, I quote it as admitted to be such by the distinguished French pathologist, and consequently as connected with Quotidian fever. That such was its origin, if its close were Typhus, I can have no question ; for the circumstances which are pointed out as having little analogy with an Intermittent, viz., the want of appetite in the intervals, the early développement of pain in the abdomen, followed by diarrhœa, surely do not militate against the idea. The case, however viewed, appears to me to be very interesting ; for, if considered as Typhus, it arose out of the intermittent type ; or if considered as an Intermittent followed by ulceration, though having little resemblance to the mild continued form of Typhus, there is reason to infer from it that the peculiar affection of the glands of the intestines is not inconsistent

with fever of a periodical type. It might be contended that it was Phthisis, fatal through the peritoneal inflammation induced by the perforation of the ileum, and that the periodical fever was hectic; but the decision of Louis is conclusive against this idea, as his perfect knowledge of Phthisis, and the accuracy of his diagnosis, would have led him to name it so, had appearances justified the conclusion: and therefore, from the known variableness of Typhus, which is sometimes wanting in its more formidable characteristic symptoms, I am obliged, from the deference I feel to the judgement of the first pathologist of the age, to conclude that the case was one of Quotidian fever terminating in the typhoid affection.

It would be premature to quote here all the details of the particular symptoms of Intermittents as compared with those of Typhus, and I shall content myself with stating the general observations which Louis makes after the investigation of the pains in the abdomen, diarrhoea, pains at the epigastrium, nausea, vomiting, state of the tongue, pharynx, &c., cerebral symptoms, the organs of sense, pains in the loins and limbs, and cough, all of which were met with in Intermittent fever. In conclusion, he says, (vol. ii. p. 306.) “ *Ainsi, les altérations d’organes ou de fonctions observées, dans le cours des maladies Continues fébriles, existaient aussi dans celles dont le type était Intermittent. La différence ne consistait guère que dans le degré. Un assez grand nombre de malades eut en effet des douleurs dans plusieurs parties de l’abdomen de la diarrhée, des vomissements, des nausées,*

de la rougeur, et de la sécheresse à la langue, de la rougeur et de la douleur dans différentes parties de l'arrièrebouche, réunies dans quelques cas à un gonflement très marqué, plusieurs espèces d'éruptions à la surface du corps et aux lèvres, de l'anxiété, du délire ; en sorte que, quelle que soit la cause du mouvement fébrile, qu'il soit Continu ou Intermittent, on le voit toujours s'accompagner du trouble des mêmes fonctions, de l'altération des mêmes organes ; et cette liaison ou cette dépendance doit paraître d'autant plus évidente ici que l'altération des fonctions était fréquemment bornée à la durée de l'accès.

“ On ne saurait prétendre d'ailleurs que les viscères dont les fonctions étaient plus ou moins altérées, fussent la cause ou le siège de la fièvre ; que le mouvement fébrile fût tantôt l'effet d'une lésion de l'estomac, tantôt celui d'une altération des bronches ou des organes qui forment l'arrière bouche, etc. ; puisque dans la plupart des cas, où le trouble d'une fonction ou la lésion d'un viscère eut lieu, c'était au troisième ou au quatrième accès. Il faut encore remarquer qu'assez souvent il y avait, chez le même sujet, plusieurs symptômes annonçant le trouble de plusieurs fonctions, que le rate avait été manifestement altérée dès le début, dans plusieurs cas où l'arrière bouche était enflammée consécutivement ; que c'est une nouvelle raison de ne pas mettre le siège de l'affection, tantôt d'un côté, tantôt d'un autre, et de considérer comme symptômes accessoires ou consécutifs ceux qui ont été successivement décrits.”

It appears from this passage that the only dif-

ference in the affection of the organs and of the functions in Continued and Intermittent fevers is in degree, and that these changes in the last are frequently limited to the duration of the accession of fever; and that they arise out of the fever, and are not to be considered as its cause. These views are in strict accordance with those of Dr. Armstrong, who believed that inflammation, of a common or specific kind, arose out of the previous excitement; and that though specific causes had a tendency to induce inflammation in particular parts, yet that Intermittent fever was an exception, being limited to the stage of congestion, of simple excitement, and of collapse, unattended by local inflammation of any appreciable degree or extent; that the super-vention of such inflammation changed the type to a remittent and continued; and he argued that these two last types, one of which was so intimately allied in nature to Intermittent fever, were modifications of one and the same disease, because there was a combination of symptoms in them which occur in no two other affections whatever.

Louis has not noticed the remittent form of fever, which stands in so interesting a relation between the two extremes, and we are therefore deprived, through his masterly analysis, of determining how it arises out of the Intermittent and passes into Continued fever, and how far its morbid appearances would partake, like its symptoms, of one or the other. The general resemblance of the changes in the organs and functions of Intermittents would, on a change of their type to Continued fever, lead us to suspect that similar morbid lesions

would be found, as in those examples where the continued form was exclusive of every other; but if this were otherwise, it would still admit of a question, how far we should be justified in denying an affinity between the periodical and continued types of fever, solely from certain differences in their morbid anatomy, as the symptoms during life show so near an approximation, and the varieties of Marsh fever are so infinite in kind. It might be expected that as the symptoms differ in degree, so would the lesions. The affection of the spleen, so prominent an effect of Intermitents, is equally common in the Typhus of Paris.

I shall now turn to the work of Pinel, which abounds in the artificial distinctions of the nosologist, many of which, judging from the work of Louis, are consigned, even in Paris, to oblivion, and which practically considered are, perhaps, of no use; not only difficult to be applied to individual cases, but leading to embarrassment, as directing the attention rather to the speculations of the closet than to the variable phenomena of nature. Pinel tells us that the history of his cases was drawn out with great care, and read at the bedside of the patient; that he then directed the attention of the students "*sur les traits qu'on peut regarder comme spécifiques de la maladie, et dès lors j'assigne la place qu'elle doit occuper dans mon cadre nosographique.*"

His observations on the topographical situation of the Salpêtrière, and the condition of its numerous inmates, are too important with relation to the causes of fever to be passed over. This immense infirmary

is devoted to elderly females, the number of which, as habitual residents, amounts to between 5000 and 6000. It is situated on the left bank of the Seine, and not far from its entrance is the little river Bièvre, into which the common sewer of the hospital flows. This being partly uncovered gives rise to exhalations, which are productive of sickness in certain parts of the establishment; and a manufactory in the vicinity, "remarquable par son insalubrité," is alluded to. The hospital is not much above the level of the river, in a moist atmosphere, exposed to southerly and south-westerly winds. The water commonly drunk is saline, containing a large proportion of sulphate and carbonate of lime, and other salts; and Pinel supposes that its habitual use gives a predisposition to the chronic Diarrhoea which is often observed in the hospital. The inmates lead a sedentary life, in a state of habitual inactivity near their beds, or in places where the air is corrupted by noxious emanations. They are, from various causes, in a state of mental depression, inseparable from their age, their poverty, and various infirmities. The situation of the hospital, not far from the Seine, and immediately on the bank of the river Bièvre, with a large reservoir of water for the uses of the establishment and the watering of its extensive gardens, exposes the inhabitants to a damp atmosphere. "Cet inconvénient est encore augmenté par leur rassemblement dans des salles vastes, continuellement habitées, embarrassées le plus souvent de deux ou de quatre rangs de lits, et de planches surchargées de divers utensiles pour les besoins de la vie. L'air de ces salles, altéré

sans cesse par la respiration de tant de personnes, est encore rempli des émanations qui s'élèvent des divers alimens liquides ou solides ; car il ne peut y avoir de réfectoire dans un lieu habité par cinq ou six mille personnes, et dont plusieurs ne peuvent sortir de leur lit : leur âge avancé et leur extrême sensibilité à l'impression du froid, leur donnent d'ailleurs une grande répugnance pour tenir les croisées ouvertes pendant trois saisons de l'année, et contribuer au renouvellement de l'air. On respire donc habituellement dans l'hospice un air chargé de vapeurs aqueuses, qui a par conséquent peu de ressort, et qui est d'ailleurs imprégné d'une foule de parties hétérogènes. Son influence sur l'économie animale doit donc être très marquée, et il doit en résulter une sorte de relâchement, une disposition singulière aux affections catarrhales, aux fièvres Gastriques, aux fièvres Adynamiques." (p. 414.)

The want of exercise also gives a predisposition to many disorders. Extreme age, palsy, hernia, blindness, chronic diseases of the uterus, diarrhoea of several years' standing, phthisis, ulcers of the legs, carcinoma, &c., confine a great many to repose, and those who have the use of their limbs exercise them little. Their muscles remain in an habitual state of torpor; the secretions languish, or a supplementary one is established from some of the mucous surfaces. The moral inactivity is equal to the physical, for the bare wants of life are secure, and the mind is reduced to a state of languor and vegetative existence, a prey to regrets, to pining, complaint, and despondency.

"Tous ces désavantages combinés peuvent-ils manquer de faire languir en général les exhalations

cutanées, et de disposer puissamment aux excrétions muqueuses, qui leur sont comme supplémentaires ? Aussi voit-on dominer dans toutes les saisons des catarrhes, des diarrhées, des leucorrhées, des fièvres Adynamiques simples, ou des complications de la fièvre Adynamique avec presque toutes les autres maladies aiguës." (p. 418.)

The same circumstances also explain the want of intensity in the inflammatory symptoms of Peripneumony, and the absence generally of inflammatory fevers, the frequency of Gastric fevers, whether continued or remittent, and especially the duration of the latter, which extend to the 42nd or 45th day. "Je n'ai vu dans l'hospice que deux de ces fièvres se terminer au quinzième jour, par des sueurs critiques, qui se sont renouvelées, même à plusieurs reprises, durant la convalescence. Une autre particularité qui tient aux localités, est la disposition qu'ont les fièvres Gastriques à se compliquer avec la fièvre Adynamique, avec des variétés suivant que l'une ou l'autre est prédominante. Ces vérités sont d'autant plus sensibles qu'en rapprochant les recensements des malades que j'ai faits à diverses périodes des trimestres d'été et d'automne, je trouve, avec peu de différence dans le nombre, des fièvres Gastriques continues, des fièvres Gastro-adynamiques, et des fièvres Rémit-tentes Gastriques : il en est de même des fièvres Adynamiques simples. La fréquence de ces fièvres est donc indépendante de l'influence des saisons, ou du moins si les saisons contribuent quelquefois à leur production par la température et les autres phénomènes atmosphériques, les dispositions locales revendiquent leur influence particulière." (p. 420.)

These observations appear to me too important to be passed over, coming from so unquestionable an authority as Pinel, and connected as they are with so many varieties of fever, occurring under the peculiar circumstances of the hospital in question. It is evident that, however modified the fevers may be by individual peculiarities, the local circumstances of the situation are considered as the essential cause of the multiform disease; and if similar modifications of fever are to be found under different physical and moral conditions in other places, it but indicates the probability of an essential remote cause common to all situations, modified in its effect by temperature and predisposition. It is certain that, in many respects, the condition of mankind is similar as to their general habits, locality, exposure to the vicissitudes of seasons, &c., but variable as to the influence which mean temperature has upon them, and perhaps upon the exhalations from the surface of the earth: and if we find an essential difference in these fevers, yet all arising apparently from some external cause, and prevailing under circumstances which, in many instances at least, are inconsistent with the idea of a cause so limited and gradually progressive as contagion, we naturally inquire what is the common cause of all, and upon what the modifications of its effects depend? If upon atmospheric causes, general or local, these are common to every latitude: but in southern climes, where the seasons return with a great regularity of succession and character, we find the periodical types of fever obeying, as it were, fixed laws, and to all appearance regulated by tem-

perature; but in more northern ones, where the heat of summer is less, and the seasons more variable, as to temperature, dryness, moisture, winds, &c., we find fever perhaps less prevalent, of a continued character generally, less obedient to stated seasons, partaking, in fact, of that irregularity and, in some degree, of that character which the winter and spring fevers of warmer climates exhibit; seasons which, in them, approximate in irregularity as to atmospheric phænomena, temperature, &c., to the climate of more northern countries. If, therefore, the periodical types of fever are, as a general rule, limited to hot countries, and the continued type to cold, and if the one, to all appearance, seems the product of malaria, why does not this common cause in alluvial soils produce the same effect in high as in low latitudes; why throughout the districts of Italy and the Mediterranean are the intermittent and remittent types of fever so common, and Typhus or Continued fever, in its exclusive form, rare or unknown; and why, as in Scotland, is the latter type the endemic of the country, and the former ones, as indigenous products of its soil, unknown? Is it that the lakes and rivers and marshes of Italy are alone susceptible of producing malaria, or that this cause in the north fails of producing on the less susceptible inhabitant the same effect that it produces on the more irritable constitution of the native of the south? I allude to these general views of fever here, because I conceive that an exclusive consideration of the fevers of any one city or country is apt to mislead us as to the true nature of the disease.

I have shown, certainly from imperfect documents, that there is an apparent gradation in the fevers of America from the south to the north, and an intermediate point where the periodical and continued types meet, varying in prevalence with apparent variation of the temperature of different years, and where the one more distinctly, or commonly at least, passes and repasses into the other; and in this inquiry into the fevers of Europe, tracing them equally from the south, we find at Paris the unequivocal existence of Typhus, associated, it is true, with periodical fever, but referred to similar causes, and not to contagion.

But to pursue the observations of Pinel: "Les exemples de fièvre Adénoméningée ou Muqueuse qu'on remarque dans l'hospice sont très rares, et ne peuvent être regardés comme l'effet des localités: il paroît même que le plus souvent cette fièvre est produite par une disposition originaire, ou par un concours particulier de causes physiques et morales, qui la rendent épidémique à une certaine époque, et dans un lieu déterminé, comme Wagler l'a fait voir pour Göttingue et Sarcone pour Naples. Prague peut être aussi cité pour exemple d'une ville qui, par une position particulière et la manière de vivre de ses habitans, est très-propre à fomentier les fièvres Muqueuses, comme Plenciz l'a exposé dans ses Observations de Médecine. Sous ce point de vue, on pourrait former les mêmes conjectures pour l'hospice de la Salpêtrière, situé auprès d'une grande rivière, et sur le penchant d'une colline, en se dirigeant par une simple analogie. Mais une observation constanté, qui est une guide bien plus

sûr, apprend que la fièvre Muqueuse est très-loin d'être fréquente dans cet hospice, et que ce sont presque toujours les mêmes femmes qui en sont attaquées à des époques plus ou moins éloignées.

" La position topographique de l'hospice, l'âge très avancé de la plupart des infirmes, leur genre de nourriture, leur manière de vivre, leurs affections morales les plus ordinaires, tout semble concourir à porter une impression de débilité sur les fonctions de l'économie animale, et par conséquent à produire une extrême fréquence de ce qu'on appelle *fièvre Putride ou Adynamique* dans presque toutes les saisons de l'année : aussi cette maladie regne-t-elle constamment dans les infirmeries, tant dans un état de simplicité, que dans ses diverses complications avec la fièvre Gastrique, ou avec la fièvre Muqueuse, ou même avec quelques-unes des phlegmasies.

" J'avais fait remarquer dans ma Nosographie relativement à la *fièvre Rémittente putride* que les faits n'étoient point encore assez multipliés et assez clairement énoncés pour établir ses caractères générique et spécifique. Je publie deux cas qui appartiennent à ce genre : le premier a offert sans doute quelques symptômes fugaces et obscurs d'une péripneumonie latente, et j'ai classé cette maladie parmi les *fièvres Rémittentes-adyamiques*.

" Les *fièvres Ataxiques*, dues presque toujours à des causes très-intenses, sont en général rares dans l'hospice, puisque on en observe à peine chaque mois deux ou trois cas sur plus de deux cents malades, mêmes durant la plus grande fréquence des maladies, comme en automne et en hiver : et on peut bien moins les attribuer à l'effet des lo-

calités, qu'à des circonstances particulières où se trouvent les femmes qui les ont contractées. Les exemples très-caractérisés que j'en donne d'abord, ont été pris sur des élèves qui s'étoient excédés de travail ou épuisés de toute autre manière. Un concours particulier de circonstances les a rendues très-frequentes à une certaine époque de la révolution, l'automne de 1794, puisque j'eus occasion d'en observer 12 en Vendémiaire [September 23 to October 22], 15 en Brumaire [October 23 to November 21,] 10 en Frimaire [November 22 to December 22]. Il étoit entré les mois précédens, dans l'hospice, un grand nombre de femmes âgées, qui avoient lutté auparavant contre l'infortune et les angoisses d'une détresse extrême, &c. Transportées dans les infirmeries, la plupart offroient toutes les marques d'un état de stupeur et de morne désespoir, avec une rêvasserie légère et un pouls foible, mais très variable. Quelquefois c'étoit une perte totale des fonctions de l'entendement, avec un air d'égarement et de consternation profonde. Quelques unes étoient plongées dans un état extrême de langueur, avec un flux de ventre colliquatif, une oedématie des pieds et des jambes, et tous les indices d'une mort prochaine. Tantôt s'étoit un refus obstiné de bouillon, tantôt des demandes d'alimens, avec une impuissance absolue d'en faire usage, ou un resserrement spasmodique des organes de la déglutition. Dans tous les cas on observoit presque toujours un dépérissement progressif, une chute rapide et complète des forces de la vie, et une agonie plus ou moins prolongée.

“ On n'a besoin que de rappeler ce qui a été dit

sur la position topographique de la Salpêtrière pour juger que certains dortoirs (qu'on appelle *emplois*,) sont plus particulièrement exposés aux émanations insalubres et quelquefois infectes qui s'élèvent soit de la petite rivière de Bièvre, remplie de vase et de saletés, soit de la partie de l'égout qui reste à découvert avant de se jeter dans cette rivière. On sait que les *fièvres Ataxiques*, Intermittentes ou Rémittentes tiennent en général à une cause semblable ; et pour confirmer ce fait ou le rectifier, j'ai tenu compte de celles qui règnent dans l'hospice, et j'ai noté avec soin les *dortoirs* particuliers d'où venoient ces malades lors de leur entrée à l'infirmerie. Le résultat de ce rapprochement a été que *l'Emploi des ménages* et le *Bâtiment*, qui sont le plus directement exposés aux émanations insalubres dont je parle, donnoient particulièrement lieu à ces *fièvres pernicieuses*." (p. 420—427.)

These extracts comprehend the general observations of Pinel on the fevers of the Salpêtrière ; and with reference to any local specific cause it may be said that two are pointed out, viz. the vitiated air of the crowded hospital, contaminated with animal effluvia, and the exhalations from the river and common sewer.

In the enumeration of the fevers, we have the *Putrid* or *Adynamic*, simple or complicated, Continued and Remittent ; *Gastric fevers* of the same types, simple and complicated ; *Mucous fever* ; the *Slow nervous* ; the *Cerebral* ; and the *Ataxique* ; most of which, if we were to judge from names, are the same as the *fièvre Typhoïde* of Louis. The complications of the simple fevers show how diffi-

cult it is to limit nature to the arbitrary distinctions of art, for we have the *Adynamic* mixed up with *Gastric* and with *Mucous* fever, or with *inflammations*, and *vice versd*. The *Remittent Gastric* is lingering, and the *Putrid Remittent* is referred to *Adynamic*. The *Mucous* is rare, and supposed to depend upon individual predisposition, yet elsewhere it prevails epidemically; and the *Ataxic*, though generally rare, sometimes is prevalent, either from a variable intensity or amount of the local malaria, or a variable susceptibility to its action. The *Putrid Adynamic*, the Continued and Remittent *Gastric*, and the *Gastro-adynamic*, are not confined to season; or if season has an influence over them, local circumstances have equally their tendency to produce them. Now if the majority of these names are but so many denominations of Typhus, which the grouping of the "*Gastro-entérite, fièvre Putride, Adynamique, Ataxique, Typhoïde, &c. &c.*," by Louis, would lead us justly to infer, we have Typhus of a continued and remittent character referred to marsh effluvium and to animal effluvium, and no mention of contagion. But whatever name or names may be affixed to fever, it has been my object to show the probability of an intermittent, remittent, and continued form of fever, in its sporadic or epidemic state of prevalence, arising from atmospheric causes, general and local, influenced by temperature to all appearances, and not legitimately, perhaps, to be referred to a contagion *sui generis*. That a comparison may be instituted between the fevers of the Salpêtrière and those of other places and countries, I shall notice each as

briefly as possible. The following Table is abridged from Pinel :

Fevers at the Salpêtrière.

	1800.			1801.		
	Sept. 23 to Oct. 22.	Oct. 23 to Nov. 21.	Nov. 22 to Dec. 22.	Mar. 22 to Apr. 20.	Apr. 21 to May 20.	May 21 to June 19.
Embarras gastrique.....	27	9	21	1	3	2
Fièvre gastrique continue simple	10	3	4	2	4	3
Remittente gastrique simple	5	1	...	...	...	...
Tierce gastrique	4	1	1	...	...	...
Tierce régulière } gastrique {	...	...	...	4	3	...
— irrégulière }	...	...	...	2	1	...
Adénoménagée continue simple.....	...	1	...	1	1	1
— remittente simple.....	...	5	...	...	...	...
Quotidienne vraie	3	3	...	...	...	...
— régulière } adénom-	...	...	...	2	1	...
— irrégulière } éningée {	...	...	...	...	1	1
Quarte simple	1	4	...	...	...	...
Adynamique continue simple.....	...	2	1	5	4	3
Gastro- adynamique.....	...	...	...	2	1	...
Ataxique sporadique	1	2	...	...	...	...
— cérébrale.....	...	...	...	1	...	...
Lente nerveuse	...	1	...	...	...	...
Atacto- adynamique	1	...	...	...	...	...
	52	22	27	20	19	10

In the general account of these fevers, I shall make use of the descriptions and observations contained in the “*Nosographie Philosophique*,” as the “*Médecine Clinique*” is intended as an illustration of it.

The *Gastric* or *Bilious* fever of Pinel includes a variety of affections, from a simple disorder of the stomach or bowels, to Cholera and Yellow fever, considered as the ultimate grade of the bilious Intermittent or Remittent; and in the view which Dr. Armstrong took of the effect of malaria, viz. that of its exciting an intermittent, a remittent, or continued form of fever, this order of the great

French nosologist would not only comprise some examples of the specific, but of the common forms of fever, as I have illustrated them in the account of Dr. Armstrong's opinions. I am well aware of the conjectural nature of every opinion that can be offered as to the causes of disease; and in the difficulty of approximating to anything like precision upon the subject, I have merely advocated those of my deceased friend, and brought facts in their support, because they appeared to me to be more simple, definite, and susceptible of an extensive application than any I had met with from other authorities. My support of them can be considered in no other light than as an attempt to illustrate them in the manner in which I understand them, and as I believe he would have illustrated them, had he lived to take a survey of the fevers of America and Europe, as I have done; and I would hope that, as his views of fever are remarkable for their simplicity, his reputation may not be implicated in any of the errors into which I may fall in my attempts to apply them. He believed that every fever having an intermittent or remittent type, was the product of malaria, and that Typhus was the continued type of the same remote cause. I have hazarded the supposition that differences of mean temperature are probably connected with these different effects. This conception of the agency of malaria makes serious inroads into the symptomatical distinctions of nosology; for periodical fever, whether Gastric, Mucous, Adynamic, Ataxic, and Typhus, whether mild, inflammatory, or congestive, are brought by it into modifications of one disease.

His *Common* fever, the product of a variety of ordinary disturbing causes, is of two kinds, viz. simple excitement, or Inflammatory fever, having neither the periodical type of the milder and most precipitant forms of Marsh fever, nor the specific combined symptoms of Typhus.

Taking these views as my guide, and with a distinct impression on my mind of the general character of fever as an epidemic, in different latitudes and under different circumstances in those latitudes, I am led to the conclusion that the Gastric or Bilious fever of Pinel includes common with specific fever, the one the product of heat and ordinary disturbing causes, and the other of malaria; and though it may be difficult to say where, at all times, the one cause ends and the other begins, yet I conceive that some approximation to the probable influence of each may be attained by an appeal to the usual progress of fever in those countries where heat and malaria are annual and successive in their effects; and I am not prepared to assert that in the present state of our knowledge anything beyond an approximation to probabilities can be attained. If it be asserted that there is much assumed in the principles of Dr. Armstrong, I would confidently appeal to the same embarrassment as involved in the opinions of every one who has attempted to reduce fevers into systematic order. The nosologist has attempted it in vain; for his arrangements have successively been maintained and abandoned, and the labours of Louis must have many followers before we can classify fevers satisfactorily by their lesions. I have aimed at no more than to glance at

their probable remote cause, and the circumstances which modify it.

The Gastric or Bilious fevers of Pinel form the second order of his nosology, and under them are included the *Embarras gastrique et intestinal*, *Cholera*, and a *Continued, Remittent and Intermittent Gastric fever*. I have already shown how closely Cholera is associated with Marsh fever; and on the supposition that it owes its origin to the same remote cause, it might be contended that the gastric and the intestinal disorder were modifications of the same affection, the difference in the effect produced being owing to individual predisposition.

We have seen in America that the combined action of heat and malaria is apparently essential to Yellow fever; and if the existence of the latter cause be hypothetical, we are led to infer it from the limits of the disease, and to explain its prevalence, especially in the lower latitudes, by the undue action of heat in unseasoned constitutions, as it is confined so exclusively to strangers. The cooperation of the same causes produces in the natives a fever of a lower grade of action; and as we proceed to higher latitudes, where the only sensible change is in the diminished mean temperature, we find fever of a continued type predominating, yet bearing the same relation to the Remittent as this does to the Intermittent; and hence the supposition of the modifying effects of temperature on the type of fever. It is the difficulty of justly estimating the proportionate influence of heat, dryness, cold, moisture, and malaria, in its pos-

sible variation of quality and amount, that makes the embarrassment as to the causes of fever; and yet the prevalence of Intermittent and Yellow fever in hot countries, and of Typhus in cold, may be appealed to as some evidence as to the maximum influence of temperature, to say nothing of the mixed types of fever that are observed in the latitudes intermediate to the countries where Periodical fevers on the one hand, and Continued on the other, are annually endemic. It is a singular analogy between these fevers, that their greatest prevalence in their respective countries is during the autumn and winter, as if heat and cold required a prolonged effect to give intensity to them; and if the one is more decidedly and suddenly checked in its progress by the change from the hot and stagnant air of autumn to the cold bracing winds of winter, we can account for the frequent prolongation and more imperceptible decline of the epidemics of the other, by the variable cold and wet weather of the winters and springs of the more northern climate.

The *Embarras Gastrique* of Pinel will afford a general idea of what he calls Gastric or Bilious fever, if a fever of a continued, remittent, or intermittent type be imagined to be occasionally associated with it. It is characterized by a bitter taste, white or yellowish fur on the tongue, loss of appetite, nausea, vomiting of a yellowish green bitter matter, the epigastrium sensible on pressure, with or without fever, sometimes accompanied by more or less alarming "*sympathetic*" affections, as headache over the brows, delirium, deafness, apo-

plexy, palsy, variable pains, convulsions, &c. It ceases by spontaneous or provoked vomiting, and sometimes without any sensible evacuation; and among its predisposing and occasional causes are, confinement in hospitals, prisons, ships, a warm moist temperature, the end of summer, food difficult of digestion, &c.; and it is either sporadic, epidemic, or endemic.

In the *Embarras intestinal* there are colic, borborrygmi, flatulence, tension of the abdomen, constipation, or diarrhoea with liquid, greenish yellow stools, with or without fever, lassitude, especially in the loins and knees, and it goes off in a longer or shorter time with diarrhoea, spontaneous or provoked.

In *Cholera* there is repeated vomiting, first of half-digested food, and of a green, brown, and sometimes black matter, and at the same time frequent stools of the same kind, attended by an acute, lacerating, burning pain in the stomach and bowels, anxiety, great thirst, flatulence, tumid or sunk abdomen, with or without fever, and frequently spasmodic contractions in the legs, arms, &c. If very intense, it is attended with swooning, palpitations, syncope, small and almost imperceptible pulse, hiccough, coldness of the extremities, burning sensation in the internal parts, profuse and often cold sweat, and extreme prostration, followed by prompt recovery, or gangrene of the intestines and death. Its predisposing and occasional causes are hot climates, summer, peculiar aliments, or irritating minerals, suppression of perspiration, of gout, and of cutaneous eruptions. It is either sporadic or

epidemic, and sometimes symptomatic of the Ataxic, Intermittent, or Remittent Gastric fever.

In the *Gastric* or *Bilious* fever there is a bitter taste in the mouth; tongue coated with a moist, and afterwards with a more or less dry yellowish fur; intense thirst, with a desire for acidulated cold drinks; pain on pressure over the epigastrium; constipation or diarrhoea; pulse strong, frequent; acrid, burning heat to the touch; skin dry, except at the end of the paroxysms or accessions, or at the termination of the disease; urine high-coloured, thick, at first without sediment, afterwards with a rose- or brick-coloured one, especially if the type is intermittent; lacerating pain in the forehead, sometimes delirium, sleep none, or unrefreshing, great moral susceptibility, with a fatigued or a bruised sensation in the limbs, and sometimes a general or partial yellowness of the skin.

This fever is Continued, Remittent, or Intermittent, the exacerbations occurring most commonly in the morning, of a tertian or double tertian type, sometimes Quotidian, Quartan, or erratic. The Continued lasts from 7 to 14 or 21 days, the Remittent from 14 to 40, the Intermittent terminates at the 3rd, 5th, or 7th paroxysm, or later. They end with vomiting, bilious diarrhoea, general sweat, or urine with a rose- or brick-coloured sediment.

The Continued sometimes passes, towards the 5th or 7th day, into a *Putrid* or *Adynamic* fever; often towards its decline into an *Intermittent*; while the *Remittent* passes commonly into the *Continued*. These fevers may become complicated with inflam-

matory fever, though this is only observable in those of a continued type. The predisposing and occasional causes are, the bilious temperament, residence in camps, prisons; warm moist temperature; hot climates, summer, spirituous liquors, great exercise, &c., or a neglected *Embarras gastrique ou intestinal*. It may be sporadic, epidemic, or endemic.

From this account of Gastric fever, it may include slight disorders from occasional causes, the Inflammatory endemic of warm climates, and Marsh fever. The difference in the duration and in the effects of Continued fever from common and specific causes is seen by comparing that described by Dr. Skey at Malta, and Typhus as it exists generally in this country. The one is so clearly a fever of high excitement, tending rapidly to inflammation, and cut short so immediately by prompt recourse to V. S., that we cannot see in it any of the usual symptoms or character of a Marsh fever; and as in countries of a high mean temperature these peculiar symptoms are so constantly observed to attend fevers of a periodical type, we are justified in believing that no Continued Marsh fever, which does not frequently arise out of, or pass into periodical fever, can exist in them, especially as we never see any Continued fever of a dangerous character, and attended with the usual lingering sequelæ of Typhus, prevailing epidemically in them. We have, therefore, three proofs that the Continued fever of hot climates is common and not specific; viz. its symptoms, the success of prompt depletion in arresting it, and the evidence of its not prevailing as an epidemic. If it had any connexion with malaria, it would follow the

course of the Intermittent or Remittent fever, partake more or less of their symptoms and sequelæ, have, like them and like Typhus, a determinate duration, and from the high excitability and irritability of the inhabitants would prove very mortal.

The Continued Gastric of Pinel, as described in his cases, (*Méd. Clinique*, p. 36,) has some affinity with Remittent fever. That of the girl of 17, at page 36, appears to have commenced as an Intermittent, for rigors are mentioned on the 1st and 5th days, and a paroxysm is reported on the 6th, 8th, 10th and 14th.

Pinel considers the principal seat of these fevers to be in the stomach and duodenum, the liver and pancreas, as is evident in the *Embarras gastrique ou intestinal*, and in Cholera, as well as in the Continued or Intermittent Gastric fever, which is so often complicated with the gastric or intestinal disorder, and which, even when existing without them, is characterized by a high degree of sensibility in the epigastrium, by heat of the abdomen, intense thirst, constipation, or diarrhœa. But "what connexion," he inquires, "is there between the occasional physical or moral causes, and the increase of the febrile irritability in the parts affected? Do the secreted humours play a primary or secondary part, and on what circumstances do the phænomena of the Remittent and Intermittent fevers depend?"

The epidemics to which he alludes in his *Nosographie Philosophique*, as belonging to this fever, suggest the idea of a marsh disease. He refers to that of Lausanne in 1755, and to that in the county of Tecklembourg, 1776, as exhibiting in

their rise examples of the *Embarras Gastrique*, but they both passed into Gastric fever, and that of Lausanne, with the type of a Tertian or double Tertian, into Putrid fever. The Gastric fever of hot climates degenerates into Adynamic fever; and the Yellow fever of America, though it commences as a Bilious fever, he says, passes rapidly into another form.

These observations, taken in connexion with the climates and seasons in which this fever prevails, prove to my mind the influence of heat and malaria in its production; and though it may be difficult to define the limits of either cause, the agency of the last appears unquestionable, from the defined localities of the periodical fever to which it gives rise, a limitation consistent with the idea of a local cause, but inexplicable on the idea of one so general in its influence as heat.

The third order of Pinel includes the *Fievre Adénoméningée*, or Mucous fever, examples of which are given in the Table under a continued, remittent and intermittent form, the quotidian and quartan being the types it most commonly follows.

Pinel says that amongst the predisposing and occasional causes of this fever may be ranked the lymphatic temperament, sex, infancy, age, a weak, languid, pale, depressed condition; residence in unhealthy, cold, moist, low, marshy places sheltered from the sun's rays; autumn, a cold, moist temperature, &c.

It is characterized by a general paleness and flaccidity; a clammy state of the mouth, an insipid viscid saliva, a moist whitish fur on the tongue,

aphthæ, slight thirst, total loss of appetite, and aversion to food; nidorous eructations, distention and weight of epigastrium; nausea, or vomiting of an insipid or acid, and more or less coloured viscid matter; the abdomen sensible on pressure, colic, flatulence, borborygmi: constipation, or mucous and sometimes sanguineous diarrhœa, with tenesmus, worms; pulse small, feeble, often little changed, or even slower than natural; respiration but little disturbed, often a slight cough, with mucous expectoration; heat moderate, and never communicating an acrid sensation to the touch, except from a long-continued pressure; perspiration suppressed, or a partial sourish sweat during sleep, at night or towards the morning, especially on the 9th, 11th, 14th, or 17th day; urine scanty or abundant, often passed with pain and difficulty, limpid and yellow at first, with a greyish sediment towards the 4th or 5th day, and a brick-coloured one towards the decline; copious salivation, and sometimes a slight tendency to œdema; with a sense of weight in the head, dullness and obtuse headache, referred to the sinciput and occiput, vertigo on assuming the erect posture, and sometimes confusion of ideas, the senses dull, with somnolency, or sleep disturbed by reveries, or wakefulness; lassitude, contusive pains in the limbs and joints; dejection, or a restless, fretful, complaining state; with frequent eruptions, which come out at night, on the 6th, 11th, 14th, 21st or 23rd day, and which appear and disappear alternately.

It is difficult from this general account of the Mucous fever to assign probable causes to it, without a reference to particular epidemics, and

their associated circumstances. It is evident from Pinel's admission, that the ancients only saw it under a *Quotidian* type. "Les anciens n'avaient sans doute occasion de les observer que sous le type de Quotidiennes, et ils leur donnaient ce nom. Galien et ses sectateurs, qui font jouer la pituite au gré de leur imagination, supposent le siège de ces fièvres dans le ventricule, le mésentère, les intestins; et Baglivi les appelle expressément *mésentériques*. On leur a donné aussi tour-à-tour le nom de *lentes*, de *pituiteuses*, de *muqueuses*." (*Nosog. Philos.* p. 94.)

The periodical type associated with them, on the view which I have uniformly taken of it, precludes me from referring such examples to any other remote cause than malaria, and I find that the remittent and intermittent types predominated over the continued at the Salpêtrière. Out of twenty-five cases of the Mucous fever in the Table, abridged from Pinel, four were Continued, five Remittent, eleven Quotidians, and five Quartans.

When it is considered how much, even in the southern latitudes, the phænomena of periodical fever are varied, from predisposition and from the seasons, we can reasonably suppose that the winter, which would appear to be the more usual season for lingering Quotidians and Quartans, having the general character of the Mucous fever, would in more northern climates, under peculiar circumstances, exhibit cases of a similar disease under different types; and if the continued type were found in them to prevail over the periodical, it would only be in accordance with the views which

I have entertained of the influence of temperature over the types of fever. Pinel says that the duration of these fevers is generally long; that the Continued may last from 15 to 21 days, or longer; the Remittent six weeks; and the Intermittent even indefinitely, being protracted from one season to another. This we know is the common fate of winter Intermittents in southern climates. I shall quote one case from Pinel, under what he calls the *fièvre Rémittente Musqueuse simple*, as it occurred at the Salpêtrière.

A woman, æt. 60, of a feeble constitution, was taken to the infirmary, "après avoir eu quatre accès de fièvre sous le type tierce." 12th day: "Frisson, commençant par les pieds, et s'étendant à tout le corps: après, alternatives de froid et de chaud, chaleur vive de courte durée, sueur abondante, langue sèche, gercée, bouche amère." 15th day: "Horripilations pendant une demi heure, chaleur durant neuf heures, avec ardeur d'urine." 20th day: "Frisson violent; durant la rémission engourdissement des pieds, douleurs abdominales, langue tantôt sèche, tantôt humide." 24th day: "Point de sueur après l'accès; le lendemain, paroxysme. Peu de changement jusqu'au vingt-neuvième jour: à cette époque, diminution progressive des symptômes jusqu'au trente-troisième: alors œdématisation des membres abdominaux." 35th day: "Vomissement spontané, traits de la face altérés, pâleur, accroissement de l'œdématisation, prostration; pouls foible, fréquent. 40th day: "Dévoiement, chute totale des forces. 42nd day: "Selles sanguinolentes, anasarque, mort dans la nuit du 43^e.

“ Autopsie : abdomen météorisé, duquel s'échappe un gaz fétide, épanchement d'un fluide séreux ; les intestines offrent dans toute leur étendue des taches bleuâtres, livides, de différentes grandeurs. La membrane muqueuse ne présente aucune trace d'inflammation ; les glandes mésentériques sont considérablement développées, et d'une couleur cendrée.” (*Med. Clin.*, p. 60.)

It is evident from this case that what Pinel calls a Remittent fever is what others would consider an Intermittent. He says, (*Nosog. Phil.*, p. 166,) “ Le mot de *fièvre Rémittente* a été appliquée en général aux fièvres marquées par des alternatives de rémission et d'exacerbation des symptômes, ce qui comprend presque toutes les fièvres essentielles. Quelques auteurs n'ont appelé *fièvres Rémittentes* que celles qui offrent, avec une continuité de l'état fébrile, des retours périodiques d'accès en froid et en chaud ; ce qui donne à ce terme une signification beaucoup plus restreinte et la seule qu'on doive conserver, si on veut s'entendre.” In the case alluded to, the rigors are mentioned till the 20th or 24th day ; after which there is no evidence of the state of the fever. Towards the close there was diarrhoea, with sanguineous stools, and after death meteorismus, serous effusion, livid spots in the intestines, but no traces of inflammation in the mucous membrane, though the mesenteric glands were considerably enlarged.

Pinel alludes to two epidemics of Mucous fever, one at Prague, and the other at Göttinguen, latitude $51^{\circ} 31'$, in 1760, described by Wagler. I shall offer a report of the last, which Pinel considers

to have been like the Slow Nervous fever of Huxham.

It was in this epidemic of Göttinguen that the Trichuris, or Trichocephalus worm, was first discovered, and supposed to be connected with the disease, either as cause or effect, though subsequent observation has shown that the worm is very common, giving rise to few or no symptoms by which its presence can be detected. It was first described by Roederer, and published by Wrisberg in a preface to Wagler's work*, one of the most instructive histories of an epidemic in the annals of medicine, as exhibiting the changing aspects of fever, commencing under the form of an Intermittent. I shall first show the progress of the epidemic, and then the character of the Mucous fever.

“ Medio Julio 1760, *febres Intermittentes* modo benignæ et regulares, modo malignate stipatæ et larva Continuarum tectæ, notabantur. Longe frequentiores atque majori vehementia grassabantur mense Augusto, *simplices, duplices, febres præcipue Intermittente Continua, et potissimum Quotidianæ malignæ*, diversimodo solutæ. Aliæ vario modo irregulares, *Quotidianæ, Tertianæ*, interdum adeo rebelles, ut nec ipso specifico domari potuerint. Passim Dysenteria caput extulit, sed sporadice et mitior: frequentia enim tormina et alvi profluvium ipsis febribus Intermittentibus juncta fuerunt.

“ Septembri continuatur *Intermittens*: semel *Tertiana regularis* critico modo *Peripneumoniam*

* Tractatus de Morbo Mucoso: editus ab H. A. Wrisberg, Gœttingæ, 1788.

malignam excepit. Postea, inter rariores *Intermittentes*, increvit *Dysenteria* ferocior, et latius indies dispersa, ex prægressa per aliquot hebdomades *Diarrhæa*.

“Plurimos mense Octobri trucidavit malum dysentericum. Sensim evanescit mense Novembri *epidemia Dysenterica*, vel potius transitu facto *degenerat in epidemiam Mucosam*. Versus mensis finem jam multum verminant ægri. Sub finem anni jam latius divagatur *Mucosum epidemicum*, multosque interimit.

“Primus anni 1761 mensis favet funesto malo Mucoso. Exasperatur verminosum. Folliculi mucosi ventriculi et intestinorum eleganter conspicui sunt in cadaveribus: hepar acinosum; superficies intestinorum crassorum escharis tegitur, ut in *Dysentericis*. Ipsa intestinorum substantia crassa deprehenditur, et propter inflammationem, villosæ imprimis, per reliquas tunicas transparentem, colorem cœrulescentem intestina referunt. Febris mucosa acuta, interdum cum typo Hemitriæto, decurrit; haud raro *in speciem malignam biliosam vel putridam* adascendit, præcipue in nosocomio castrensi. Similis fere morbi facies fuit *in vicinia*: magis tamen biliosus passim erat morbus: rarioribus vermibus junctis.

“Mense Februario *febris Mucosæ savitia* perquam augetur: interdum relapsu critico transit in morbum inflammatorium benignum. Plurimos tamen trucidat, tum gangræna abdominali, tum metastasi scirrhusa vel purulenta in pulmones et alia viscera. Admodum verminat in nosocomiis: sæpe etiam *in biliosam, quin putridam vertitur*. Rariores nunc

apparent folliculi: frequentior lien magnus, et alia inflammationis abdominalis signa se produnt. De-lentur quoque hepatis acini.

“Subsequente Martio *morbus Mucosus in Petechi-zantem evehitur*, junctis deliriis furiosis et soporibus. Solvitur interdum Mucosum per crisin in sanguinis gelatinam. Subinde multum inflamma-torii cum morbo Mucoso combinatur. In cadaveri-bus inflammationes gangrænosæ sunt frequentes. Grassatur nunc icterus, in quem non raro morbus Mucosus critico modo transit.

“Mense Aprili Mucosum et verminosum præcipue inter infantes adhuc obtinent, et multos lento modo jugulant. Icteri epidemia crescit. Copiosæ rursus *Intermittentes vernales* occurrunt, variæ indolis, ut plurimum tamen benignæ.

“Maio *febris Mucosa, eademque recidiva in veram Intermittentem transit*. Subinde inter simulacra pleuritica primum stadium decurrit, et tota febris *typum Hemitritæum* æmulatur.

“Æstate demum successive evanescit epidemia Mucosa et verminosa. Vestigia tamen quædam diu residua manent, tum in morborum decursu tum in cadaveribus. Appetente Autumno redit *Intermit-tentium* cohors: in universum vero pejoris indolis sunt quam vernales: multoties malignæ, soporosæ. Quædam per largiores potus vinosi haustus in *veram putridam* pessimam degenerarunt.” (pp. 22—27.)

The transition of disease from one form to another in this epidemic is remarkable. In suc-cession we have regular and benignant Intermittents, or irregular ones under the mask of Continued fever, occasionally accompanied by tormina and diarrhœa.

Then Dysentery appears, at first sporadic and mild, but as the Intermittents decline, it becomes more severe, and finally passes into Mucous fever, which sometimes has the type of a semitertian, and not unfrequently degenerates into a malignant, bilious, or putrid fever; and the epidemic is not confined to the city, but exists also in the neighbourhood. In February the fever assumes an inflammatory character, and the morbid appearances are changed. In March it becomes a Petechial fever. In April Intermittents reappear: and in May, the Mucous fever passes distinctly into them. That a common cause or causes, modified in its or their effects by individual predisposition and season, is connected with this series of disease was evidently the belief of the author, from the affinity which he traces between Dysentery and the Mucous fever, and between these and Intermittents.

In speaking of this affinity between Dysentery and the Mucous fever, he says, "*Congruunt quamplurima in utroque morbo phænomena. Eadem utriusque est origo ex Intermittentium epidemiâ, eo saltem discrimine, quod Dysenteria genitricem proxime excipiat: morbus mucosus ex Dysenterid nascatur.*" (p. 28.)

And of their affinity with Intermittents, he says, pp. 30-37, "*februm abdominalium radix æstimari potest febris Intermittens, ex qua omnes reliquæ ad ipsas pessimas malignas, tanquam degeneres proles, progerminant. Omnibus unus idemque fons communis, idemque exemplar esse videtur: sed pro causarum determinantium, maxime æris, diversitate, modo Intermittens ad regulam formata, modo quæ-*

vis irregularis, modo alia quælibet maligna, oritur: quid? quod in ipso decursu, tum totius epidemiæ, tum singulorum interdum individuorum, sæpius à priori tramite decedit, et speciem mutat.

“ Ipsa epidemia *manifesto* ex prægressa Intermittente originem traxit, licet morbi facies ab Intermittentium indole adeo deflexerit, ut forma longe diversam putaveris, nisi transitu et tota serie probe observatis, quælibet sobolis species sui originem prodidisset. Varia autem monstrant morbum dysentericum esse degenerem Intermittentis prolem: et prouti *Dysenteria febris Intermittentis filia*, ita subsequens epidemia *Mucosa illius matris neptis*, quasi salutari meretur.

“ Grassabantur, Augusto præcipue et Septembri, *veræ Intermittentes, ad usque ipsam* epidemiæ Dysentericæ et sequioris Mucosæ *ortum*: quin sub initium novæ constitutionis passim adhuc una vel altera Intermittens, vario modo jam depravata, frequenti diarrhœa stipata, et à forma deflectens, transitum fecit. Febris Intermittens bene soluta, omnium præstantissimum contra Dysenteriam æque ac febrem Mucosam fuit præsidium. Immunes etiam ab utroque morbo manserunt, licet fractos horæos immensa copia devoraverint, quibus nulla ad Intermittentes dispositio fuit, et quibus febriculæ nocturnæ magis fuerunt domesticæ. E contrario in præcipiti erant multum dispositi ad concipiendas Intermittentes. Intermittens, licet Dysenteria subinde solvatur, nunquam tamen in morbum Mucosum, se-riorem videlicet, transiit. Vicissim raro in casu Dysenteria, congruis tempestate et remediis, critico modo ad Intermittentis indolem rediit: idem et ratione

morbi Mucosi appetente demum vere contigit. Quibus in locis rara occurrit Intermittens, ut in montanis, ut plurimum frequentiores sunt Dysenteriae, eoque simul peiores.

“Memorabilis est observatio quod hoc anno multi febre Intermittente et Dysenteria simul laborarint, sine vera Intermittente dysenterica. In vico vicino *Mengershausen*, epidemice grassata est febris Intermittens sola: in alio vico, paulo remotiori, montibus vicinis cincto, *Maentzen*, eodem tempore, sola Dysenteria sæviit: in alio vico, inter priores medio, uterque morbus rarissimus fuit, et semel Dysenteria, post obortum frigus, critico modo in febrem Intermittentem Quotidianam fuit transmutata.

“Haud raro febris Mucosa Intermittentium imaginem utcumque typo Hemitritæo expressit. In nonnullis ægris, febre Mucosa soporosa detentis, pulsus frequentia ad veram quandam febris intermissionem periodicam est delapsa. Magnam quoque analogiam semper notavimus inter febrem Mucosam perniciosam et febrem Intermittentem, quæ dicitur maligna. Appropinquante vere, vitio illo, quod indolem Intermittentis obfuscaverat, sensim subacto, ipsa febris Mucosa critico modo in veram Intermittentem fuit commutata. Et senescente demum epidemia Mucosa, jam primo vere rursus veræ febres Intermittentes comparuerunt, atque eadem ratione qua divulgata fuit Intermittens, febris Mucosæ frequentia decrevit, donec demum prorsus cessaverit.

“Admodum proclives sunt, præ reliquis hominibus, ad concipiendas febres malignas, quibus ad febres Intermittentes est dispositio eminens. In-

termittens male soluta aut intempestive suppressa, aliquoties per intervalla rediit: pessima demum maligna, loco Intermittentis consuetæ, solet accendi. Ipsa quoque febris Intermittentis, autumnalis præcipue, indoles regularis, causæ externæ impulsu, eo interdum subvertitur, ut in pessimam malignam biliosam vel putridam, transeat. Hand raro itaque eodem tempore, quo Intermittens grassatur, quidam *ex vitio diætæ vel privata quadam labe*, in pessimas malignas incidunt. Præterea, si curatius attendamus, in qualibet maligna aliquid Intermittentis, vel typum Hemitritæum, notamus, tectæ originis manifestum indicium. Transit Intermittentium Epidemia quolibet fere anno in varii generis malignas, quæ rursus cedunt, dum accedente vere indoles Intermittentium resuscitatur."

I have been unwilling to abridge these important observations. They show unequivocally the Protean character of Marsh fever, which first appeared of a periodical type, and passed through Dysentery into Continued fever, to reappear in the spring in its original form. If it be contended that the results of *post mortem* examinations establish a distinct character in each of these diseases, I should doubt the propriety of such arbitrary distinction, when a series of observations, made through successive months and seasons, prove so clearly the successive transitions of one disease into another. That a common cause should become modified in its effects by a difference of locality or difference of individual predisposition giving rise, as was the case here, to Intermittents in one place and to Dysentery in another, at the same time, I can believe; but

neither the symptoms nor the morbid lesions would lead me to infer that in nature the diseases were absolutely distinct; for a diseased action, resulting from a common cause, falling on different parts, from predisposition or other circumstances, would not constitute a difference in the nature of a disease, that was prevailing epidemically, single in one place and mixed in another, with one form occasionally assuming the other in the same person. I would appeal to the almost infinite varieties of Intermittents as described by Torti and Alibert, as proofs of the various effects of malaria; and if in the observations of the Professor of Modena we do not find examples of a Continued fever prevailing through the winter after these varieties of the periodical type, I would urge the comparative intensity of his autumnal fevers, and the change which the cold of winter produces on the more irritable organization of the Italian. The prolonged duration of the epidemics of more northern latitudes, under a continued type, is probably referable to the influence of a low temperature on a less sensible fibre. The inference of Louis as to there being an essential lesion in Typhus is, no doubt, true in Paris; but I doubt whether it can, in the present state of our knowledge, be admitted as an axiom applicable to all countries, nor would the absence of this lesion in fatal Intermittents or Remittents in Italy, shake my faith in these forms of fever having an affinity, from a common cause, to Typhus. The Intermittent is not Typhus, though springing, as I believe, from the same cause; it probably, therefore, would not have its lesion: but if the Intermittent becomes

continued, then, if Typhus has an essential lesion, I should confidently expect to find it after death. The change of type is to my mind a proof of identity of the two forms of disease; and I have shown that one of Louis's cases was of this compound character, and admitted as an example of his Typhus fever.

But to revert to the Mucous fever of Göttinguen. The primary cause is said to have been the epidemic constitution of the air. "Ex eodem fonte epidemico primi febris Intermittentis, mali Dysenterici, morbique Mucosi rivuli fluunt. Forsan ipsum illud epidemicum incognitum per diu protractas causas physicas, *inter quas aër proculdubio eminet*, ita mutatur, ut varios effectus edat." (p. 40.)

I must refer to the description of the city, and the condition of the wretched inhabitants, suffering from all the rigours of a siege, with a numerous army within its walls; from bad food; the accumulations of filth in the streets; the suffering from cold through a damp autumn and winter; and the mental distress inseparable from war, its privations and miseries.

There are several varieties of the Mucous fever, described, as the *chronic*, the *acute*, the *slow*, and the *accessory*, or that in which the fever supervened to pregnancy, wounds, chronic disorders, &c.; these last conditions acting as exciting causes of the epidemic disease. I shall briefly notice the mild and malignant acute form, to show, both from symptoms and lesions, that the *morbis Mucosus* was Typhus.

The chronic form was ushered in by loss of appetite, nausea and vomiting, diarrhoea, aphthæ, worms

ejected upwards or downwards, and an erratic fever, symptomatic of abdominal disorder. These symptoms, lasting a longer or shorter time, disappeared, or were preliminary to the acute form of the disease, which differed in degree. The *mild* form varied in the type of the fever, which was continued, or like a regular Intermittent, or erratic, terminating by the 7th, 11th, or 14th day. The *malignant* had alternately violent exacerbations like a Semitertian, and was protracted to the 21st day. The *mild* form was ushered in by rigors, nausea and vomiting, loss of appetite, &c., attended sometimes with pleuritic symptoms. “Jactatur corpus, minuuntur vires, labascit mens depressa, morosa, inquieta. Aliis in somnolentiam demersis, varia sub somno phantasmata observantur: alios deliriorum turbæ exagitant inter anxietates auctas. In acutissima et multum vigente febre, pro diarrhœa succenturiatus sudor profunditur, cum artuum dolore. In aliis tertio quartove die, ab laxantibus alvus lacescit, et inde nata atque in decursum morbi protracta diarrhœa, remediî veluti continuatus effectus esse videtur *. Alii ab initio diarrhœa laborarunt: materia excreta mucosa est: morbo adolescente haud raro simul sanguinolenta; in ulteriori progressu magis biliosa. Raro spumantia cum impetu eliduntur excrementa; quin ubi in perverso morbo ad mortem vergit, sanguine remixta, putrida, foetidissima. Dejectiones alvinas subinde comitantur tenesmi, dolores abdominis gravissimi colici, præcipue in regione coli transversî urgentes. Haud raro ægri adeo vehementem pressionem sentiunt, ac si valide stringeretur intesti-

* Louis considers this effect of laxatives diagnostic of Typhus.

num. Excrementis subinde admisti sunt utriusque generis vermes. Durum, inflatum, tactuque dolens abdomen magis familiare infantibus quam adultis est. Haud raro dolent pedes, rarius tument. Satis constans symptoma est, et huic morbo fere specificum, excoariatio oris interni, qua tumidula lingua et gingivæ aphthis dolentibus obsidentur. Os cum faucibus magni muci copia conspurcatum est, sub majori febris æstu siccum." (pp. 77—79.)

In speaking of the critical solutions of the disease, he notices pustules about the lips, "quæ passim ad corporis superficiem emergunt, interdum veri furunculi speciem referentes. Nec non pustulas scabiosas observavimus et purpurea exanthemata. Rariori in casu simul accedunt exulcerationes in regione ossis sacri et trochanterum majorum, quas præcedere solet metastasis ad aures internas, cum susurru perpetuo et audiendi facultate abolita mentisque stupore." (p. 82.)

The *malignant* form differed only in degree from the *mild*. "Limites utriusque, variis speciebus intermediis, adeo obfuscantur, ut subinde, transitu ex priori in alteram facto, confluant. Facile tamen distinguuntur extremi hujus scalæ gradus. Non differunt essentiâ, sed gradu. Quæ inter utramque speciem medium locum occupat, utriusque indolis particeps, vermibus maxime favet." (p. 95.)

This malignant variety arose as the Intermittents declined, and prevailed wherever there was a contamination of atmosphere, whether in hospitals or the haunts of poverty, but it attacked none who had passed through a regular Intermittent the preceding autumn. "Castra tempestive iis in locis

posuit, quibus spurcitie accommodatam et congruam sibi sedem offenderat, et ubi victimarum copia in promptu erat. Loca magno ægrorum confluxu squalida, qualia sunt Nosodochia, prima occupavit: quin ex uno nosocomio, aliquot milliaria dissito, in alterum transplanta est. Exinde populabatur per urbem: pauperum tabernas et sordida plebeiorum cubilia pulsabat, tandemque in reliquum populum diffusa ruebat. Nec parcebat, qui in nosocomiis sæpe versabantur medentibus, administris. Magis præ aliis in præcipiti erant, quibus dispositio domestica fuit ad concipiendas febres Intermittentes. Neminem incessit, qui autumnno proxime prægresso febre Intermittente qualicumque, bene soluta, laboraverat. Semper adoriebatur adultos, raro ætate juniores, nunquam infantes.

“Vehementia morbi ad deliria pertinacissima, furiosa, vel sopores gravissimos, extollitur. Duplici modo ægrum jugulat: alios inflammatio et gangræna abdominalis opprimit; in aliis vero ad pulmones decumbit funestum malum: in quamplurimis utrumque vitium ita copulatur, ut Peripneumonicorum mors funestum ex abdomine malum sequatur. Periculum exanthemata neque tollunt neque augent.

“In universum hanc regulam constantem notavimus; speciem benignam solo fere transitu in hanc alteram putridam fieri funestam, et vicissim speciem hanc perniciosam non nisi per reditum ad purioris normam in ægri salutem corrigi.” (p. 96—99.)

I shall not attempt to give a more definite account of this epidemic, for the observations in the admirable report of the author would lead me to a

great length. Perhaps no work, before or since, is comparable to it for precision in tracing the various phases of an epidemic, and in the extent and completion of its details. It affords a very convincing proof of the mutable form of Marsh fever, which I cannot believe, in any of its varieties, is possessed of a contagious property. That appearances occasionally favour the opposite conclusion I admit; but under an epidemic state of atmosphere, many circumstances may act as exciting causes of the disease, without the agency of a matter *sui generis* being concerned in its propagation. In the details of the morbid appearances there are some facts which harmonize with the observations of Louis, though the predominant lesion of the mucous membrane of the intestines was an hypertrophied condition of the glands of Brunner. Whether the glands of Peyer are different, except in being grouped together, I am ignorant.

There are thirteen cases reported at the end of the volume, in which the morbid lesions are given in detail.

The spleen, in nearly all, was larger and softer than natural, and the mesenteric glands generally enlarged and discoloured. In the fifth case the spleen is said to have been "maximus, ipsum parenchyma molle, resolutum et gangrænosum est. In fine ilei, ad omnem superficiem valvulæ Bauhini, in toto canali appendicis vermiformis, in cæco, et sub ipsum coli dextri initium copiosissimi conspiciuntur Folliculi coagmentati, in capitula non elevati, sed simpliciter orificiis nigricantibus, confertim congregatis, distincti." And he adds :

“Passim in superficie intestinorum tenuium interna, *areas quasdam*, intestini canalem sequentes, variae magnitudinis, aliquot pollices longas, dimidium latas, plurimis stigmatibus exiguis, obscurioribus, stipatis, notatas, in hoc et compluribus aliis cadaveribus vidimus. Ita autem comparata est illa foveolarum seges, ac si in illarum sede villosæ particulae essent decerptæ aut exesæ.” (p. 280.)

The extent to which I have carried these observations forbids my entering into more details of the lesions. The last I conceive to be sufficient to identify the disease with the Typhus of Louis; and I rest my own opinion of the affinities between all the forms of the epidemic, upon the authority of Wagler, to whom I believe we are chiefly indebted for this admirable work, as Roederer died soon after he read his memoir on the Trichuris to the Society at Göttinguen.

There is one observation too curious, however, to be omitted, supporting the view I have entertained of the influence of temperature over the type of fever. I shall offer it without comment.

“Prouti blanda aëris temperies hiemalis in genere favet febribus Mucosis, ita mitior sensim tempore vernali aëris vicissitudo mature resuscitat veras Intermittentes. Sic vel in hac ipsa epidemia mucosa, jam sub finem Februarii et Martii initium, quasdam Intermittentes, licet raras, notavimus. Licet rariissima sit vera Intermittens hiemalis, interdum tamen occurrit, quando dispositi, diu temperato aëre, sine notabili frigoris et caloris vicissitudine, ob vitæ genus sedentarium fruuntur. Ita *Quotidianam regularem* hac ipsa hyeme, licet frigus intentissimum

urerat, experiebatur, primis Januarii diebus, puerpera, quæ plures menses in hypocausto temperata latuerat. Et forsàn hæc ipsa conditio multum confert ad emendandas et in intermittentem naturam convertendas malignas." (p. 169.)

Of the *Putrid* or *Adynamic* fever, which forms the 4th order of Pinel, we have in the Table 18 examples, 15 of the *simple Continued*, and 3 of the *Gastro-adynamic*. There are 3 cases reported at p. 86. of the *Remittent* type, which do not appear in the Table. It was to this order that Pinel originally referred Typhus, but he subsequently placed it under Ataxic fever. As this arrangement probably does not materially affect the account which Pinel gives of Adynamic fever in his nosology, since both it and Ataxic fever are considered as synonymous with Typhus by Louis, I shall quote the general description, as it affords proofs of this form arising out of the other modifications, which I have already considered, and of its having occasionally the periodical type.

The term *Adynamic* has reference to the debility which attends it; "tout indique d'une manière évidente, une atteinte profonde portée sur les forces vitales, une diminution notable de la sensibilité organique et de la contractilité musculaire."

In the reports of the Fevers of America I have had frequent occasion to allude to the probable influence of visible sources of putrefaction in generating or aggravating fever; and I may quote the authority of Pinel in support of this view, for in his enumeration of the predisposing and occasional causes of Adynamic fever, he includes these as well

as malaria. Its causes, he says, are, "an habitual residence in low moist situations, in prisons, hospitals, camps, near common sewers, dissecting-rooms, and all confined places, the air of which is not renovated, or which is vitiated by putrefactive emanations, by the crowding of persons, either well or ill, especially such as have Adynamic or Ataxic fever, gangrene or caries, &c., and exposure to marsh effluvium, especially during sleep, &c.

I would remark in this enumeration of causes that a foul air is common to all of them; and that a matter of contagion *sui generis* is by no means implied in the allusion to an atmosphere vitiated by Adynamic or Ataxic fevers, since the disease under consideration may be induced by emanations from persons previously healthy, when crowded together in a confined place, or from persons under similar circumstances labouring under gangrene or caries. I would particularly refer to the Typhus of America, as I have traced its appearance on the alluvial soils of the Ohio; at Wilmington in Delaware, where it alternated with Yellow fever in years differing as to mean temperature, dryness and moisture; in the city of New York, where it prevailed most in those years when Yellow fever was least observed; and in Vermont, where it is the exclusive endemic, and uniformly an autumnal disease, extending however into the winter, as it does in this country. These are facts which must be taken into consideration in the settlement of the question whether Typhus originates in a specific contagion; and if it be admitted that they bear upon its malarious origin, how, but by the supposition of the modi-

fyng influence of temperature; are we to explain its absence in southern countries, which abound in other evidences of the effects of malaria, and these effects disappearing in northern ones, while Typhus is annual in its visitations in them?

Since the first volume was published, I have met with a fact relative to the Typhus of the New England States which I may quote appositely here, and it affords a remarkable example of the opposite conclusions which may be deduced from it. Dr. Smith*, in speaking of the Typhus of New England, says, "It has been suggested that Typhus occasionally arises from marsh miasmata, the same which under certain circumstances produce Intermitting and Remitting fevers. A fact which I shall here adduce is strongly opposed to this hypothesis. On the Connecticut River, from Northampton in Massachusetts to its source, a distance of more than two hundred miles from south to north, and on all its tributary streams on both sides, for an hundred miles in width, there has been no instance of any persons having contracted the Intermitting fever, from the first settlement of the country to the present time; and yet the Typhous fever has prevailed more or less in every township within that tract of country."

This fact, coming from so high an authority as Dr. Smith, is doubly valuable. But I draw an inference from it directly opposite to that which he meant it should support. The country alluded to lies between latitude $42^{\circ} 16'$ and 45° , and is in the same parallel as that in which I had shown

* Practical Essay on Typhous Fever, by N. Smith, M. D., Professor of Physic, &c., in Yale College. New York 1824. p. 15.

previously Typhus to prevail in Vermont. Can it be conceived that in the hot summers of New England, the alluvial soils of the banks of the Connecticut and all its tributary streams give forth no marsh miasmata, while the rivers of the Middle and Southern States abound with it? Yet fever of a periodical type is unknown in the one, and annually endemic in the other. I can only explain this anomaly by referring the Typhus of the North to the same cause as gives rise to the periodical fever of the South, and that it is the difference of temperature which probably modifies its effects, especially as in both situations the autumn is the season in which the respective fevers generally prevail.

I have been led to this digression by my solicitude to offer the above fact, in connexion with the causes of Adynamic fever enumerated by Pinel, as circumstantial evidence against the doctrine of contagion; for it appears to my mind conclusive that a disease which may arise from marsh effluvium and contaminated air, does not depend like the unquestionable contagious diseases, upon a matter *sui generis* for its propagation.

Pinel says that Adynamic fever is sporadic, endemic and epidemic. It comes on insidiously, preceded by disorder of digestion, dull headache, somnolency, wandering pains in the limbs, lassitude and heaviness, the attack commencing with horror or rigor. I shall quote his own description of the symptoms. "Couleur livide et affaissement général; langue recouverte d'un enduit jaune-verdâtre, brunâtre, noirâtre et même noir, d'abord humide, puis

sec et même aride ; état fuligineux des gencives et des dents ; haleine fétide, soit variée, deglutition souvent impossible ou comme paralytique ; parfois vomissemens de matières variées, plus ou moins foncées en couleur ; constipation ou diarrhée ; déjections souvent involontaires, noires et fétides ; dans quelques cas météorisme ; pouls petit, mou, lent ou fréquent, souvent dur, et en apparence développé les premiers jours, mais passant subitement à un état opposé ; parfois dès le début apparence momentanée d'une congestion vers la tête ou la poitrine ; dans quelques cas hémorrhagies passives ; pétéchies, vibices, et ecchymoses ; respiration naturelle, accélérée ou ralentie ; chaleur âcre au toucher, augmentée ou diminuée ; sécheresse de la peau, ou sueur partielle froide, visqueuse et même fétide : urine retenue, rejetée avec difficulté ou rendue involontairement, citrine ou de couleur foncée dans les premières périodes, et trouble, avec une sediment grisâtre vers la fin : yeux rougeâtres ou jaunes verdâtres, chassieux, larmoyans et contournés ; regard hébété : affaiblissement de l'ouïe, de la vue, du goût, et de l'odorat : dépravation fréquente de ces deux derniers sens ; céphalalgie obtuse ; état de stupeur, somnolence, vertiges, rêvasseries ou délire taciturne, réponses lentes, tardives ; indifférence sur son propre état, prostration, affaissement des traits de la face, et des saillies musculaires en général, coucher en supination : quelquefois éruption de parotides avec ou sans diminution subéquente des symptômes, ictère, impossibilité de rubéfier la peau, et d'exciter l'organisme : gangrène

des plaïes, et en général des parties sur lesquelles le décubitus a lieu." (*Nosog.* p. 173.)

Pinel admits that this fever varies extremely, rising gradually, or suddenly coming with great violence to its height. The type is commonly continued, sometimes remittent, rarely intermittent. *The Continued often becomes Intermittent towards the decline*, while the Remittent commonly assumes the Continued type. The convalescence is slow, and a relapse frequent. The fever is not always simple, but often complicated with the *Embarras gastrique*, the *Bilious* and *Mucous* fever. In these cases, these fevers appear at the commencement, and give way on the 4th, 5th, 7th, or 8th day, to the Adynamic.

Pinel, under the *Continued Adynamic*, refers to the Petechial fever in Italy, in 1505 and 1528, described by Fracastorius. I have shown, on his authority and on that of Lancisi, Sarcone and Acerbi, that the Typhus of Italy is unlike that of Britain in type, and yet there can be no question that the two diseases are identical in nature. It would seem from the different character of the epidemics at Wilmington, Delaware, in the years 1798 and 1803, (vol. i. p. 416,) that in those latitudes where the periodical and continued types of fever occasionally are observed, the difference of the mean temperature of the sickly seasons in different years will give a preponderance to one or the other types; and facts of this kind are important, as showing the necessity of accurate data as to temperature, winds, dryness, or moisture, which

affect the character of fever. I have no doubt of the modifying effects of these secondary causes, and that until we have a series of observations on the atmospheric phænomena, the mean temperature of the year, and of each month, so as to compare one year and one season with another for all climates, we can only approximate to probabilities in our conclusions as to the influence of temperature, &c., on the type of fever. This is especially necessary in those intermediate latitudes where the different types meet together, for, as a general rule, it would seem that in a high mean temperature the exclusive continued form of specific fever is unknown, as the periodical is in one of a low mean. Whether in the former a concentrated malaria would produce a Continued fever, as we sometimes see a diffused one produce a Periodical fever in the latter, I am not prepared to say; but the existence of mild Intermitents in country districts, as compared with severe and subcontinued ones in cities, would lead to the inference that there was a difference in concentration or quality of the remote cause, unless the milder or the more severe effect produced is to be attributed partly or exclusively to the predisposition to disease, which is greater in cities and less in the country. That considerations of this kind are important with relation to the causes of fever, I think is apparent from the contrast observed in the fevers of the sea-coast and of the interior of America; the confined air, the concentrated exhalations, the impaired general health of the inhabitants, and the higher temperature in cities, affording some explanation of the more aggravated

disease observable in them, and it is the difficulty of duly estimating all the particular circumstances connected with the development of fever, that renders it to appearance so anomalous and variable in character.

The Continued Adynamic fever not only appears originally as such in some cases, but occasionally arises out of the *Embarras gastrique*, or the *Bilious* and *Mucous* fever; the symptoms constituting the Adynamic character only appearing from the 4th to the 8th day of the disease. It may reasonably be asked whether these degenerations imply any real difference as to the nature and causes of these fevers, or whether they do not clearly prove that they are all modifications in degree of one and the same disease? We are perpetually meeting with them in fevers of both types, and whether periodical or continued, we find that the aggravated stages of both have many symptoms in common. In the pernicious fevers of Italy, which bear the same relation to the mild Intermittent as the Adynamic or Typhus does to the milder Gastric or Mucous fever, we have parotids as a frequent symptom, and it is the same in Typhus; so that this glandular affection may be considered as indicative of the severity of the disease, not existing in the milder forms of either type, but appearing in the more malignant. Pinel alludes to the prevalence of a continued Adynamic fever in Paris, in the winter of 1794, and associates it with the miseries which arose out of that period of the revolution, and he says, “un des caractères particuliers de ces fièvres a été l'éruption de parotides symptomatiques,

dont la terminaison a été funeste, soit par l'impossibilité d'y exciter une suppuration favorable, à l'aide de moyens internes ou externes, soit par une terminaison gangréneuse. Sur quatre-vingt treize exemples de fièvres putrides, durant le trimestre d'automne de l'année suivante, quatorze furent marqués par des éruptions de semblables parotides."

The existence of these glandular swellings accompanying either the periodical or the continued type of fever, approximates them in character to the Plague, which I cannot but consider as the highest grade of Marsh fever; and it is unquestionable that in those latitudes where either of these types prevails, Plague follows the general character of their fevers, either assuming, more or less distinctly, the tertian type at the South, or the continued in the North. I would not be understood to imply that the parotid alone constitutes Plague, but that it affords a gradation towards it; and other symptoms are occasionally united to it in epidemics of Typhus, which have impressed upon the mind of many authors the idea of both diseases being modifications of each other.

Desgenettes, on the retreat of the French army from Moscow, speaks of Typhus, attended by carbuncles, attacking a division of 25,000 men at Torgau. From October 20, 1813, to the end of January, 1814, there died 13,448 soldiers of the disease. "Certes! la Peste et la fièvre jaune ne donnent point des résultats aussi désolans! M. Desgenettes rapproche le Typhus de Torgau de l'espèce désigné sous le nom de *Catarrhalis putridus*. Un temps presque constamment humide

imprimait, il ajoute, un caractère constitutionnel à cette épidémie: car l'on a observé des Pétéchies, dans un immense hôpital, très-encombré, *un anthrax compliquer le Typhus.*" (*Dict. des Sciences Méd.* vol. xv. p. 457.)

Pinel, in speaking of the irregular Typhus of Vienna as described by Hildenbrand, notices the existence of parotids, and in the stage of putridity the symptoms were, "noirceur de la langue, et enduit fuligineux des dents, fétidité des selles, lividité de la peau. Il survient la gangrène des parties comprimées, des hæmorrhagies passives, le froid des membres, des sueurs visqueuses, &c. Dans cet état, les pétéchies noirs, le charbon, et les grosses taches pestilentielle rapprochent quelquefois beaucoup cette maladie de la Peste, et la mort arrive ordinairement alors avant le septième jour."

The distinguishing characteristic of *Ataxic* or *Malignant* fever, which forms the 5th order of Pinel, is the *inordinate* and *confused* progress of its symptoms, as is observable in the varieties described by Torti. The name given by the great French nosologist to this form of fever applies directly to this confusion in the order of its phænomena; but though the mind may avail of this abstraction as a basis for artificial distinction, we find on an appeal to nature, as is freely admitted by Pinel, that the conditions on which this inordinate character depends are but modifications, as to locality or intensity, of those to which the more regular progression of ordinary symptoms is referred. We consequently find examples of Ataxic fever in every epidemic, as in that of Göttinguen, already referred

to *Mucous* fever; in that of Paris of 1794, which was quoted under *Adynamic*; and in Yellow fever, which belongs to the *Gastric* or *Bilious*. From these and other modifications, therefore, particular cases are selected, and named according to the nosological character, though the common prevalence of fever during an epidemic implies some common cause; and the individual differences can by no means be supposed to suggest a change in nature, otherwise than as the effects of predisposition, or the concentration of the morbid action in particular parts may imply it.

“ La maladie épidémique qui a régné en 1806, à Sémur et à Autun, parmi les prisonniers, n'était le plus ordinairement qu'une fièvre *Ataxo-adyynamique*. Cette complication affectait surtout les esclavons, beaucoup plus en proie à la nostalgie : elle avait pour caractère principal un pouls presque imperceptible. La mort survenait souvent le deuxième ou troisième jour : les hémorrhagies étaient fréquentes. Il parut des Parotides sans fièvre, qui cédaient à l'application des cataplasmes émolliens. Cette fièvre, ainsi que l'*Ataxique simple*, et la *Gastro-adyynamique*, qui constituaient l'épidémie en question, était occasionnée par l'encombrement des prisonniers dans des lieux étroits et peu aérés, joint à l'omission de tous les moyens de propreté ; et je saisis cette occasion pour faire remarquer combien est fondée l'opinion que nous avons émise sur la nature du *Typhus*, qui n'est souvent qu'une épidémie de fièvres de différens caractères.” (*Nosog. Phil.* p. 232.)

Pinel gives the above passage in his account of *Ataxo-adyynamic* fever; and the epidemic referred to

offered examples of this, the simple Ataxic and the Gastro-adyynamic; and he admits that *putrid or Adynamic fever* changes its character according to the part attacked. "Elle passait d'autres fois, par une sorte de métastase à une affection de la poitrine: alors toux, respiration gênée, peu ou point d'expectoration, ce qui finissait par le râle, présage ordinaire de la mort. D'autres fois c'était l'abdomen qui était surtout attaqué, alors diarrhée très fétide, ou bien météorisme du ventre, qui finissait aussi par être funeste. D'autres fois il se manifestait, avec les symptômes adynamiques, quelque affection nerveuse bien prononcée, comme délire taciturne, yeux égarés ou regard fixe, perte de connaissance, aphonie, syncope, convulsions, état comateux. Enfin, dans quelques cas, il ne se déclarait que des symptômes nerveux, sans complication: air égaré, dilatation des pupilles, urine limpide, peu de sensibilité, mouvemens convulsifs, ou toute autre affection grave. L'ouverture du corps a souvent manifesté, dans ces derniers cas, une sorte d'épanchement séreux au-dessous de la dure mère, etc." (*Nosog. Phil.* p. 231.).

In these examples of Putrid fever attacking the brain, the disease, according to the definitions of Pinel, merges into malignant or Ataxic fever; and consequently when these cerebral symptoms appear uncombined with those of putrid fever, they constitute, under the continued type, what he calls simply *Continued Ataxic fever*. "Le caractère distinctif des fièvres Ataxiques continues sporadiques, qui consiste dans une marche tumultueuse, et avec toutes les apparences de la confusion et du désordre, ne permet guère de douter qu'en général le principe

ne s'en trouve dans l'organe cérébral, et qu'elles ne deviennent funestes par un épanchement gradué d'un liquide séreux ou séroso-sanguin qui a lieu, soit dans les ventricules latéraux du cerveau, soit dans une partie quelconque de l'organe encéphalique : d'où résulte un obstacle ou une sorte d'entrave pour les efforts conservateurs que fait, en général, la nature dans les maladies aiguës." (p. 217.)

If this view is correct, and the character of specific fever depends on the concentration of action in particular parts, it may easily be supposed that individual predisposition, or whatever cause may be concerned in giving a direction to morbid action, may vary almost infinitely the phænomena of fever, and that in an epidemic every variety might be observed. Pinel distinctly refers the Ataxic form in the epidemic at Sémur to a particular set of men who, in a state of bondage, were pining for their own country; and it may be conceived that the misery and destitution into which the females admitted into the Salpêtrière in 1794 were thrown by the horrors of the revolution, would give a tendency in some, who had known better days, to the Ataxic form of fever. Even where these peculiar aggravating causes cannot apply, a constitutional anxiety of mind, or its habitual application in the discharge of the duties of life, would operate in the same way; so that under the influence of the remote cause of fever, the organic and functional soundness or unsoundness of the body, and accidental or habitual circumstances, would vary its effects. I have already remarked that in putrid or Adynamic fever Pinel thought a profound debilitating impression

was made upon the vital powers. He entirely rejects the idea of any corruption or putridity of the humours, and quotes Milman's opinion of the muscular fibre being the seat of the disease. "Milman croit pouvoir déduire que les fibres musculaires sont le siège des maladies dites *putrides*: que le pouvoir vital, inhérent dans ces fibres, est la cause prochaine et la source générale et immédiate de laquelle découlent leurs symptômes: que la similitude et l'affinité qu'on a observées entre certains signes qui suivent toutes les affections dites *putrides*, comme le relâchement des fibres, les hémorrhagies, les taches livides, tiennent à la même origine; qu'enfin les particularités observées dans divers cas de ces maladies viennent probablement des différentes manières dont sont affectées les forces vitales." (p. 192.)

In the malignant or Ataxic fevers, to the seat of which I have above referred, Pinel says: "On ne peut méconnoître des caractères qui leur sont propres, et qui, quelles que soient leurs variétés, se réduisent à des lésions de la sensibilité ou de la motilité, quelquefois en excès, et dans une sorte de concentration locale, d'autres fois en défaut ou dans un état de perversion. L'examen le plus attentif et le plus impartial des apparences qui se sont manifestées n'a fait reconnaître que diverses lésions de l'organe encéphalique. Le plus souvent ce sont des épanchemens séreux dans les sinus latéraux: d'autres fois, tous les caractères d'un état inflammatoire de la méninge, devenue opaque et épaisse, avec exsudation d'une substance concrète: quelquefois un liquide séreux en même temps épanché dans les

ventricules latéraux, et dans les fosses temporales et occipitales. On remarque, dans d'autres cas, que les vaisseaux des méninges et de la substance du cerveau sont injectés, et que la pulpe cérébrale est plus consistante que dans l'état ordinaire : en un mot, le siège de la maladie s'est toujours manifesté jusqu'ici dans la cavité encéphalique, avec toutes les apparences d'une sorte de gêne et de compression dans l'origine des nerfs. Ceci s'accorde, d'ailleurs, avec le trouble et le bouleversement des lois générales de l'économie animale, ou plutôt avec les anomalies des systèmes nerveux et musculaire, qui forment le caractère particulier des fièvres Ataxiques." (p. 274—276.)

It is apparent from these extracts that these two forms of fever are but variable expressions of one disease, probably depending on a difference as to the combination, or locality, or intensity of the morbid action. In the Adynamic "quelquefois on n'observe aucune lésion notable dans les organes; d'autres fois une rougeur foncée de la plupart des membranes muqueuses, ou un épanchement séreux dans les ventricules cérébraux."

I have only noticed the affinity between Adynamic and Ataxic fever, because the six cases contained in the Table refer to them ; but on a reference to the *Nosographie* it will be seen that the Ataxic form of fever is sometimes associated with all the preceding modifications ; a circumstance which, connected with the original character of these compound fevers, militates against the idea of a specific contagion being essential to the Ataxic form when uncombined.

The predisposing and occasional causes of Ataxic fever are nearly the same as those of the Adynamic; but as my object is to offer an illustration of Pinel's views of fever, and what he conceived to be their causes, I shall enumerate them. They are "rapid growth, hypochondriasis, melancholy, mania, the depressing or exciting passions, excessive fatigue, watchfulness, intense application of mind, especially at night; residence in a close confined atmosphere, vitiated by vegetable or animal putrefactive effluvia, or by the crowding of many persons, especially such as labour under Adynamic or Ataxic fever, or scurvy, gangrene, cancer, &c.; exposure to marsh effluvia, particularly during sleep; neglect of cleanliness, bad food, the abuse of spirits or narcotics, excessive evacuations, "épuisement par les plaisirs vénériens," &c. (p. 257.)

The symptoms are "Désordre dans les rapports qu'ont entre elles les diverses fonctions en général, et les différentes parties d'une même système ou d'un même appareil d'organes en particulier. Langue nette ou recouverte d'un enduit blanchâtre, humide ou sec; soif nulle ou très grande, quelquefois horreur de l'eau; déglutition gênée ou impossible, et parfois sentiment de strangulation; vomissement spontané ou provoqué par la cause la plus légère; diarrhée ou constipation opiniâtre. Pouls variable dans chaque région, et souvent alternativement, dans la même artère, grand et petit, fort et faible, fréquent et lent, régulier et irrégulier, ou intermittent; lipothymie et syncopes, apparences fugaces de congestions locales; rougeur et pâleur de la peau momentanées, alternes et distribuées d'une manière

irrégulière. Respiration alternativement facile et difficile, fréquente et lente, grande et petite, continue et entrecoupée ; parfois toux, hoquet, éternuement, soupirs et rire involontaires ; chaleur souvent entremêlée de frissons fugaces, moindre ou plus élevée que dans l'état de santé, inégalement répartie, et alternativement augmentée ou diminuée. Changemens prompts, opposés, et souvent alternes, des sécrétions et des exhalations ; transpiration cutanée supprimée ou augmentée, et souvent partielle, froide, et chaude, visqueuse ou ténue ; excrétion de l'urine suspendue, difficile et douloureuse, ou très abondante ; urine ordinairement limpide, quelquefois sédimenteuse, sans la moindre rémission des symptômes ; larmolement involontaire, ou sécheresse de la conjonctive. État obtus, ou sensibilité excessive des organes des sens ; vue égarée ; insomnie ou somnolence, vertiges, coma, délire, ou intégrité de l'entendement ; nulle connaissance de ses proches, et de l'état de gravité de sa maladie ; indifférence extrême sur ce point, ou inquiétude continuelle, tristesse, terreur et désespoir ; réponses brusques et dures ; voix aiguë, bégaiement ou aphonie ; douleur à l'occiput ; au dos, dans les membres, les hypochondres, ou insensibilité totale ; agitation, carphologie, prostration des forces sans évacuations abondantes, tremblement général ou local, soubresauts des tendons, convulsions, ou paralysie universelle ou partielle ; symptômes du tétanos, de la catalepsie, de l'épilepsie, &c. Ces lésions sont à peu près égales dans chaque organe ou plus fortes dans quelques uns ; de là les *fièvres cérébrales*, &c." (p. 258.)

This description of symptoms will apply much more generally to the pernicious Intermittents an

Remittents of warm climates than to the Typhus of this country. Pinel, in speaking of the *Continued Ataxic*, notices its less anomalous and less remarkable changes, which may be said to be proportionate to the lower degree of irritability attending the fevers of cold, as compared with those of hot climates. The duration depends on type; the Continued extends to the second, third, or fourth week, or longer; "les anomalies ordinairement fugaces, c'est à dire momentanées et en apparence peu intenses qui les caractérisent dans ce dernier cas, constituent alors ce que les auteurs appellent *fièvres lentes nerveuses*."

The termination of these fevers is generally fatal; and they rarely have critical evacuations when they end favourably, but a metastasis to the joints, glands, nerves, whence a succession of slow fevers, obstinate suppurations, or various lesions of the nervous system. "Les fièvres Ataxiques Rémittentes et Intermittentes se terminent d'une manière heureuse aussitôt après qu'on a pu administrer le Quinquina d'une manière convenable. *Quelquefois néanmoins elles passent à l'état de fièvres Intermittentes ordinaires, ou à celui de fièvres Ataxiques continues*." (p. 261.)

The prognosis is always unfavourable, especially in the continued type, or when there is congestion of the brain, severe diarrhœa, involuntary stools, meteorismus, hæmorrhagies, hiccup, cold sweat, watchfulness, coma. "Les complications de ces fièvres avec la fièvre inflammatoire ne sont pas encore bien démontrées; celles qui ont lieu avec les fièvres *Gastrique, Muqueuse, et Adynamique*, sont les plus fréquentes."

On reference to the cases of Ataxic fever detailed

by Pinel in his *Medicine Clinique*, it will be seen that some of the continued form had exacerbations like those of Remittent fever. At p. 97, he gives the case of a widow, æt. 67, who had resided at the Salpêtrière three years. She was seized with rigor at noon, followed by high fever, delirium, thirst, and prostration of strength. On the second day there were two exacerbations. On the third she was taken to the infirmary, "pendant l'exacerbation du matin face animée, regard fixe, étincelant, langue rugueuse, un peu fuligineuse à la base, tension de l'abdomen; pouls plein, élevé, fréquent; mouvement indéterminé du bras, grande agitation, odeur cadavereuse, sueur abondante, visqueuse à la fin du paroxysme; celui de la nuit est accompagné d'un délire très violent." No paroxysm is mentioned on the fifth day, but she died at the commencement of the sixth, having had palsy of the lids, copious stools, hurried pulse, with prostration.

There is no mention in the report of the season in which this case occurred, but the three cases of Sporadic Ataxic fever in the Table, of which this was probably one, occurred between September 23 and November 21; and it will be recollected that the Ataxic cases were generally traced to the effluvia of the common sewer of the hospital.

From this detailed report of the fevers in Paris noticed by Pinel, a sufficient evidence is obtained of their very variable character as to type and symptoms; and by comparing them with the fevers described by Torti, Lancisi and Hennen, in Italy and the Mediterranean, we find that though the periodical type is not lost, it is associated largely with the

continued, of a character closely approximating to, if not identical with, the Typhus of Britain.

On a reference to the Table of fevers observed at the Salpêtrière from September 23 to December 22, 1800, and from March 22 to June 19, 1801, we observe a gradual decrease from the autumn of the one year to the summer of the succeeding one, which accords with the usual progress and decline of fever in warm climates. The number of cases successively pass from 52 to 32, 27, 20, 19, 10, and of these, excluding the *Embarras gastrique*, we have,

Continued fever 54

Periodical fever 43;

and of the Continued, 26 occurred in autumn, 28 in the spring; and of the Periodical, 28 in autumn, and 15 in the spring. I must refer to Pinel's observations on the influence of seasons over fever, and content myself with remarking the contrast between Paris and more southern latitudes, with respect to continued, and more northern ones with respect to periodical fever.

The nosological distinctions of the fevers I have already noticed, and the inextricable confusion attending them on an appeal to Nature, is sufficient to invalidate them. I have already remarked that Pinel originally placed Typhus among the Adynamic, and subsequently among Ataxic fevers; but neither of these arrangements satisfied him, and he finally determined that it was a peculiar disease, having the character of both, and very analogous to Plague. "Ayant été (he says, *Nosog. Phil.* p. 196.) moi-même à portée de l'observer sous un grand nombre de formes différentes, je pense que le Typhus est une

maladie particulière dans laquelle les symptômes Adynamiques et Ataxiques sont continuellement mis en jeu, soit ensemble, soit séparément et que cette maladie a la plus grande analogie avec le Peste."

A fact he mentions elsewhere, however, contradicts the idea of its being a peculiar disease, for in speaking of its complications, he says, (*Med. Clin.* p. 540,) "Il n'est pas rare de voir un simple *Embarras gastrique* compliquer le Typhus. Combien de fois ne voit-on point cette maladie dangereuse marcher de concert soit avec la fièvre Gastrique, soit avec la fièvre Muqueuse! Je pourrais ici rappeler des exemples de la complication du Typhus avec la fièvre Adynamique, ou avec chacun des autres genres de la fièvre Ataxique. J'ai cité dans mes leçons deux exemples de fièvres simplement Adynamiques contractées par des filles de service, pendant qu'une foule d'autres qui remplissaient les mêmes devoirs auprès des militaires malades étaient attaquées du Typhus."

This is inexplicable to me on the idea that Typhus is a peculiar disease, propagated by a contagion *sui generis*, and clearly shows that Adynamic fever is inseparable from it. The cases alluded to occurred at the Salpêtrière in 1814, when Typhus prevailed among the French troops, worn down by hardships, discomfiture and fatigue. Pinel believed that it was propagated by contagion; though the diffusion of the disease may be explained by a vitiated atmosphere, as he admits when speaking of it in an epidemic form. After alluding to the observations of Hildenbrand, Hufeland, and Dufault, on Typhus, he says, (*Nosog. Phil.* 157,) "On voit

donc que *les épidémies de Typhus* sont constituées par de véritables fièvres Adynamiques et Ataxiques qui peuvent quelquefois prendre, à un plus ou moins haut degré, le caractère bilieux ou inflammatoire, dans les premiers temps de la maladie. Je m'abstiens, par conséquent, de toute considération sur le traitement : il ne diffère rien de celui qui convient aux fièvres de différens ordres qui se trouvent ici simples ou compliquées suivant les variétés des épidémies et des cas particuliers qu'on observe. *Les causes de cette maladie sont aussi absolument les mêmes que pour toutes les fièvres marquées par une tendance délétère* : le caractère contagieux que le Typhus prend dans son développement n'est pas équivoque, et l'on est, en général, d'accord qu'à sa première origine il dépend des différentes circonstances d'insalubrité qui peuvent agir sur les hommes à de grandes distances. L'air des marais et les vapeurs qui s'élèvent de toutes les eaux croupissantes, les exhalaisons des substances minérales et végétales en putréfaction, d'un sang corrompu, des excréments, du fumier ; l'air chargé d'émanations humaines, comme Pringle et autres auteurs l'ont surtout observé ; mais surtout l'air chargé d'émanations d'homme déjà affectés de *diverses maladies*, et principalement de fièvres : en un mot tous les corps qui peuvent produire un miasme contagieux primitif, ou en répandre l'influence dans l'atmosphère, contribuent à développer des épidémies du Typhus."

This passage, in my mind, is conclusive against anything like a contagion *sui generis* being essential to the origin and propagation of Typhus. Yellow fever is a disease which has sufficiently "*une*

tendance délétère," and we know that it is not contagious, but depends upon local contaminations of air; and in its epidemics, like those of Typhus, as admitted by Pinel in the above passage, "its first origin depends on different circumstances of insalubrity which may act on men at great distances;" at least at distances great proportionately to the limits prescribed to the action of contagion. The epidemic at Wilmington from marsh effluvium, and that at New London from animal putrefaction, (vol. i. 265 and 570,) were examples of different circumstances of insalubrity; and that these were adequate to the origin and diffusion of the disease, is confirmed by the fact of contact having no influence in extending it to those who nursed the sick, beyond the local contamination of air which first generated it.

On the supposition, therefore, that Typhus is but a modification of Marsh fever peculiar to certain latitudes of a low mean temperature, and that its origin is to be explained by "different circumstances of insalubrity acting on men at great distances" during its epidemic prevalence, the same circumstances may be supposed to act at small distances in a confined and vitiated state of atmosphere, wholly independent of any specific contagion. This was the case among the military in 1814, at the Salpêtrière; for the soldiers were admitted on the 9th of February, and Typhus did not appear among them till April and May. Had contagion in the first instance existed, it would have operated under the miserable condition they were in at once; but the Typhus did not appear for two months, a

period of time adequate to the production of a cause sufficient to account for the disease among the troops and those who attended them.

I shall offer proofs of this from Pinel's account of the disease, and the circumstances attending it. During the disastrous campaign of 1814, upwards of 25,000 sick and wounded soldiers were sent to the hospitals of Paris; and the Salpêtrière, the crowded and wretched condition of the 5 or 6000 inmates of which I have already spoken, received no less than 2000 of the men. "Huit grandes salles furent destinées au traitement des maladies internes, et des médecins éclairés vinrent également me seconder. Ce fut le 9 Février qu'on reçut les premiers malades. Il s'étoit manifesté, vers le déclin de l'automne précédent, divers cas de Typhus dans plusieurs quartiers de Paris, par les retours partiels de plusieurs militaires malades: mais on ne commença à l'observer, à l'hospice de la Salpêtrière, qu'en Avril et en Mai." (*Med. Clin.* p. 532.)

The account at p. 122 is somewhat different. He says that those sent on February 9th appeared in general "excédés de fatigue, épuisés par des marches forcées, ou des transports longs et pénibles, un mauvais régime, des privations de toute espèce, des affections morales, ou des suites d'un froid rigoureux. Le Typhus ne commença guère à devenir fréquent et à faire des progrès que vers la fin de Mars et en Avril, soit en se manifestant dans sa forme simple, soit dans ses diverses complications avec la fièvre Adynamique, les phlegmasies de la poitrine, ou une sorte de diarrhée colliquative: elle se répandit encore davantage dans le mois de Mai,

surtout parmi les employés de l'hospice." At p. 533 he says, however, that "most of the men arrived in almost a dying state, and others in periods more or less advanced of the disease." The preceding autumn had been in general cold and wet, with frequent rain and fog during December and January. In February the cold was severe, the thermometer sometimes 9° below the freezing point (Fahrenheit 12°), "la température de l'atmosphère offrit ensuite plusieurs variations et des inégalités remarquables jusqu'au commencement de Juin, époque du renvoi complet de tous les militaires malades de l'hospice."

It appears from this account that Typhus was observed in the troops in Paris in the autumn of 1813; that in February, 1814, the Salpêtrière received 2000 men in a state of great exhaustion from wounds and disease; that fever did not appear generally till April and May, especially among the attendants; and that in June the wards were cleared. This is precisely the progress of the fevers in the Table from autumn to June.

It would seem that at first the sickness of the men did not exclusively exhibit the character of Typhus, but that some cases were fevers of a different order. "La constitution médicale ayant été froide et humide, on juge facilement qu'il regna beaucoup de phlegmasies aiguës ou chroniques de la poitrine ou de l'abdomen, soit simples, soit compliquées, avec des *fièvres primitives de divers ordres*, mais surtout avec des fièvres d'un caractère grave, car la plupart des malades étaient en général réduits à un extrême accablement, et épuisés par la disette ou les transports les plus pénibles." (p. 533.)

That the circumstances under which they were placed in the hospital would tend not only to aggravate the existing fever, but to generate it in others, is apparent from Pinel's description. The men were placed "dans les anciens dortoirs des femmes, convertis à la hâte en infirmeries de militaires. C'étoit durant la saison la plus rigoureuse ; et quoique le Typhus fût très souvent compliqué avec quelque phlegmasie de la poitrine ou de l'abdomen, il ne fut point possible d'obtenir des poêles, dans ces salles, pour échauffer les boissons. Les lits étoient placés les uns à côté des autres, et comment remédier à toutes les causes, et à tous les inconvéniens d'une malpropreté inévitable ! Que d'entraves, que de confusion pour le service des malades ! Que de mesures provisoires mises en défaut ou mal exécutées ! Et comment, au milieu de tout ce chaos, tenir des journaux exacts d'une des maladies les plus graves ?" (p. 533.)

It may easily be imagined, if fever of the kinds I have previously described should appear at the Salpêtrière, wholly independent of contagion, both from their limited numbers and from the local causes existing to account for them, that the circumstances connected with the crowded state of the hospital in 1814 would generate fever, and aggravate that which was introduced into it. If contagion, that subtle agent which eludes, even on the admission of those who have faith in it, all the precautions that art can devise, could give extension to the disease, we might expect in a hospital of such numbers, equalling the population of towns of no inconsiderable magnitude, that the diffusion

of the disease in such a state of confusion and disorder, would have been proportionate to those exposed to its hazards, by direct, or the thousand channels of indirect communication. But there is no evidence of any general existence of Typhus. Three of the medical men died, one from Laryngitis, and another from Pleurisy, complicating Typhus; and 124 "filles de service," who, if they had intercourse like the sick, must equally, like the medical men, have been constantly exposed to breathe a vitiated atmosphere, under debility arising from bodily fatigue and mental distress, are mentioned to have had Typhus, and twelve died. It will be recollected that two of them had it under the form of Adynamic fever, which Pinel insists, like the Ataxic, is not to be confounded with Typhus, which he arbitrarily calls "une maladie particulière;" and which, notwithstanding the causes he ascribes to it in its epidemic prevalence, he defines provisionally as follows: "Typhus propagatur ut cætera contagia: signa hujus febris sunt stupor quasi attonitus, plus minus gravis dolor contusivus capitis et membrorum, somnolentia alternans cum delirio miti, eruptio petechialis, complicatio frequens cum aliâ quâcumque febre aut phlegmasiâ: nulla crisis, sensibus obvia, sed solutio morbi, vulgo in uno è primis septennariis, nisi symptomata sint in summo gradu." (*Med. Clin.* p. 543.)

I appeal to the evidence I have already adduced in the first volume against this nosological pretension to precision, and against this doctrine of Marsh fever depending on contagion. Whatever difficulties are connected with Typhus, they are not

surmounted by referring to it a contagious property *sui generis*; and though I make no pretension to have offered additional light on the subject, I cannot say that on a general view of fever, as it exists in different latitudes, I have met, in the opinions of others, with any one which appears so tenable as that I have hypothetically advanced as to the influence of mean temperature. That an exclusive view of fever, in any particular city or country, will afford a fair view of its nature or causes, I think cannot be maintained, and though in the present state of our knowledge it would be impossible to arrive at a satisfactory conclusion as to causes, yet a general view may lead to a more extended inquiry as to all those circumstances which, in different countries and years and seasons, are apparently connected with the production of similar fevers.

CHAPTER XII.

TYPHUS OF PARIS.

THE admirable work* of Louis, worthy to be regarded as a perfect model for all future investigations into the nature of disease, must be considered definitive as to the character of Typhus in Paris; but whether similar observations will show a perfect analogy between the fever he has described and that of other countries, must be left to future

* *Recherches sur la Maladie connue sous les noms de Gastro-Entérite, Fièvre Putride, Adynamique, Ataxique, Typhoïde, &c.*, par P. Ch. A. Louis. 2 vols. Paris 1829.

investigation. I am not aware of any researches in this or any other country that can be compared with his for variety and precision of detail, and indeed none can be expected but from those who enjoy similar advantages of hospital observation. It may be long before we meet with any one possessed of the same accomplishments, equally imbued with the love of science, and qualified by the same powers of analysis and cautious habits of induction, who will produce a work worthy to be contrasted with that of the great French pathologist, whose labours will ultimately effect an important reformation in medical science, by introducing an accuracy before unknown.

Louis collected the histories of all the acute affections admitted from 1822 to 1827 into two wards of the hospital La Charité, then under the superintendence of Mons. Chomel. In this period, "j'ai rassemblé," he says, "138 observations de *fièvre Typhoïde*, dont 50 relatives à des individus qui ont succombé. J'ai analysé les unes et les autres, et afin de connoître, parmi les nombreuses lésions de ceux qui ont péri, celles qui sont propres à l'affection typhoïde, je les ai comparées aux altérations observées à la suite d'autres maladies aiguës, chez 83 sujets, dont j'ai aussi recueilli l'histoire. J'ai fait le même travail pour les symptômes, chez les malades atteints de *fièvre Typhoïde*, ou de toute autre affection aiguë, terminée par le retour à la santé ou par la mort ; en sorte que j'ai analysé les altérations des viscères de 133 sujets, et les symptômes de près de 900." (Pref. p. 9.)

The conclusion to which he came was, that an

affection of the glands of Peyer is inseparable from Typhus, and constitutes its peculiar anatomical character. But associated with this lesion are some more or less peculiar to Typhus, and others common to many acute diseases.

As this important work is but little known in this country, I shall offer an analysis of the general observations which were suggested by the cases.

I have already quoted one of his cases, which began with the symptoms of an Intermittent; and I may remark, that though, with that exception, they afford little or no evidence of an unequivocal transition from the periodical to the continued type of fever, a great majority were brought in late, when, if any signs of an intermittent or remittent character had existed, they would have passed away. Out of 55 cases, 44 were admitted from the 7th to the 28th day of the disease, and of these 22 were from the 14th to the 28th; and though, had *regular* Ague existed previously, paroxysms coming on singly at stated hours, daily or every third day, would have been noticed in the general report given by the patient of his previous state, yet the symptoms of a double Tertian or of Remittent fever could hardly have been described with precision. I find several cases in which "*frissons*," sometimes followed by heat and sweat, are spoken of among the early symptoms, and as occurring more or less irregularly for some days; and when it is recollected that Pinel admits of the change from the intermittent to the continued type in Paris, and that Louis considers an enlargement and softening of the spleen as a frequent, and, in some respects, a pecu-

liar characteristic of Typhus, the limited number of his cases, though with only one clear indication of the disease having been under his observation associated with a periodical character at the commencement, does not invalidate the possibility of the frequency of this connexion there.

As I have hitherto depended on a statement of the *symptoms* of fevers, from the want of all precision as to their morbid anatomy, to found an analogy between those of different countries upon, I shall quote the general enumeration of those given by Louis, and enlarge upon the particulars of a few which appear in some respects peculiar to that capital. This seems to be the case with diarrhœa, which in a great majority of instances attends the disease from the first, so that Louis conceived the morbid alteration of the glands of Peyer was synchronous with its origin.

With respect to the symptoms in those who died, Louis says, " La maladie débutait ordinairement avec une certaine violence, par des frissons accompagnés de tremblement, la céphalalgie, des lassitudes universelles, l'anorexie, la soif, quelques douleurs de ventre ; et dans la majeure partie des cas, des selles liquides se joignaient à ces symptômes, dans les premières vingt-quatre heures. La chaleur succédait aux frissons : ceux-ci se renouvelaient plusieurs jours de suite chez presque tous les sujets, ordinairement le soir. Puis la chaleur étoit permanente, plus ou moins vive, et presque toujours sèche."

These symptoms became successively more severe, and others, referrible to the functions of the brain,

the senses and the abdomen eventually gave to the disease its peculiar characteristics.

“ Les malades éprouvaient une faiblesse peu proportionnée aux autres symptômes et à la gravité apparente de l'affection ; des éblouissements dès qu'ils faisaient un pas, se tenaient debout ou à leur séant. Ils avaient de la somnolence, d'abord à un faible degré, bientôt considérable, de manière à y retomber aussitôt qu'on cessait de les interroger. Leur mémoire était lente, l'exercice des facultés intellectuelles leur repugnait beaucoup, ils étaient indifférents, et plusieurs de ceux qui avaient des selles involontaires ne demandaient pas même à être nettoyés. Bien que dans un continuel assoupissement ils se plaignaient de ne pas dormir, n'ayant qu'un sommeil fatigant, troublé par des rêves, auquel ils cherchaient en vain à résister. Le délire se joignait, dans beaucoup de cas, à la somnolence, la précédait rarement, débutait 2, 3, 5, ou 6 jours et plus après elle ; tantôt léger, pendant la nuit ; tantôt plus marqué, presque continu ; tantôt agité, furieux, qu'on était obligé de maintenir les malades dans leur lit avec le gilet de force ; et comme la somnolence, ce symptôme persistait jusqu'au terme fatal, si ce n'est chez quelques individus dont l'affection traînait en longueur.

“ Des bourdonnements d'oreille avaient lieu chez un assez grand nombre de malades, quelquefois unis à une certaine dureté de l'ouïe. Celle-ci débutait ordinairement un peu plus tard, augmentait par degrés, devenait extrême chez quelques sujets.

“ Les yeux étaient injectés, plus ou moins cuisants, quelquefois d'une teinte rose uniforme, bien rare-

ment dès le début ; et quelques malades voyaient les objets comme à travers un nuage épais ou confusément, alors même qu'ils étaient couchés dans leur lit. Il y eut un léger strabisme dans un cas. Beaucoup d'individus avaient des saignements de nez dont ils n'éprouvaient aucun soulagement. La plupart offraient à la surface du corps une éruption de taches roses, lenticulaires, plus ou moins rapprochées, ordinairement vers le dixième jour de l'affection, rarement le septième, jamais avant ; et cette éruption ne variait pas moins pour la durée que pour l'abondance. Des sudamina [*Lichen* ? or *Miliaria* ?] s'y joignaient assez fréquemment.

“ Le ventre se météorisait, conservait bien rarement jusqu'à la fin le volume et la forme qui lui sont naturels, et le météorisme, qui resta toujours peu considérable chez quelques sujets, devenait progressivement plus marqué chez les autres de manière que, chez un certain nombre d'entre eux, le ventre dépassait le niveau de la poitrine.”

As these symptoms, all more or less characteristic, became developed, the diarrhœa increased, the stools became involuntary when there was much delirium, and the feculent matter was mixed with a considerable quantity of blood.

“ La langue, qui n'offrit rien de remarquable dans un assez grand nombre de cas, était ordinairement collante ou sèche ; tantôt rousse ou rouge, encroûtée ou non, fendillée ou non, noirâtre chez quelques malades, plus ou moins épaisse chez d'autres. Plusieurs la sortaient de la bouche avec peine, tremblante, la laissaient entre leurs dents, et oubliaient de la rentrer. La déglutition était parfois gênée,

l'arrière bouche plus ou moins enflammée. Quelques individus avaient des douleurs à l'épigastre et des nausées ; un moins grand nombre de vomissements, et ceux-ci avaient ordinairement lieu dans les derniers temps de l'affection. L'affaiblissement devenait chaque jour plus marqué, les malades tremblaient sur leurs jambes, avaient la démarche des gens ivres, s'en plaignaient même quelquefois ; puis ne satisfaisaient qu'avec peine à leurs besoins ; bientôt même ils en étaient incapables pour la plupart, et passaient toute ou la plus grande partie de la journée dans la même position, ordinairement sur le dos, se laissant manier comme des corps inertes."

The integuments of the sacrum became red, excoriated, and sooner or later gangrenous ; the blistered surfaces covered with an ill-conditioned pus ; livid in colour, sometimes ulcerated, or with an entire destruction of the skin.

" La chaleur était sèche, ordinairement très élevée ; les frissons n'avaient lieu que dans des cas rares, et signalaient le début de quelque lésion secondaire, l'érysipèle, par exemple. Le pouls restait fort accéléré, battait cent fois et au delà, bien rarement moins ; perdait la largeur, qu'il avait chez le plus grand nombre des sujets au début ; devenait petit, faible, serré, irrégulier ; tandis que chez quelques malades il conservait une certaine largeur jusqu'à la mort. La toux, qui existait chez la plupart des individus, était rarement incommode, presque toujours accompagnée d'un râle sonore universel, auquel se joignait chez certains individus, dans les derniers jours de l'affection un peu de râle

crépitant ; seul signe d'une inflammation du parenchyme pulmonaire, ordinairement peu étendue.

“Les changements successifs dans la physionomie étaient remarquables. Bouffie et violacée au commencement, chez un assez grand nombre de snjets, la figure perdait peu à peu ce caractère, était pour ainsi dire, sans expression, puis exprimait l'affaïssement, la stupeur ou l'indifférence, et dans certains cas, une profonde préoccupation ; ou bien encore, la fureur ou l'égarement, suivant l'espèce de délire. Dans quelques cas aussi elle étoit comme empreinte de douleur ; dans d'autres, on y observait des mouvements spasmodiques dans les muscles des lèvres, les zygomatiques ou ceux de la mâchoire inférieure, ou une contraction permanente des paupières. Ces spasmes étaient quelquefois d'assez longue durée, avaient également lieu dans d'autres régions du corps ; en sorte que tantôt on observait des soubresauts dans les tendons, tantôt des mouvements spasmodiques très marqués des membres supérieurs, tantôt une contraction permanente des mêmes parties, et des muscles du cou.

“ Enfin, la mort survenait, soit au milieu du délire, soit dans une sorte de calme, les malades n'ayant perdu connaissance que quelques heures auparavant ; quelquefois d'une manière imprévue. Assez souvent elle était due à des lésions secondaires ou précipitée par la perforation de l'intestin grêle, qui donnait presque constamment lieu aux symptômes d'une péritonite intense.”

The above was the usual progress of the disease ; but it varied in its character, sometimes assuming the appearance of the “ *Embarras gastrique*,” at

others having the character of the *Putrid, Ataxic, Inflammatory*, or *Typhoid* fever.

“Ainsi, plusieurs malades n'éprouvèrent, pendant un certain espace de temps, qu'un simple mouvement fébrile, une chaleur forte, une soif vive, peu de somnolence, quelques étourdissements, une perte incomplète d'appetit, un affaissement médiocre, sans douleurs de ventre, sans diarrhée, sans aucun symptôme qui indiquât d'une manière sûre le siège de l'affection. Quelques uns même (trois) n'eurent pas de dévoitement; et ce n'est qu'après 5, 6, 8 jours, que les douleurs de ventre et la diarrhée se manifestaient chez les autres; et alors l'affection suivait sa marche accoutumée.

“Chez quelques sujets, la fièvre, après avoir débuté avec une sorte de vivacité, diminuait: la faiblesse étoit peu considérable, les symptômes caractéristiques n'avaient pas lieu, l'affection paraissait légère, le malade semblait, au premier abord, avoir plutôt un simple *Embarras gastrique* que toute autre maladie. C'étoit la *forme latente*, et le diagnostic restait incertain jusqu'à la mort, ou jusqu'au moment où la perforation de l'intestin levait tous les doutes.”

The ordinary character of the disease was occasionally changed by the intensity of particular symptoms. “Tantôt la diarrhée et le météorisme dominaient, tantôt l'affaissement, le délire, les symptômes spasmodiques de toute espèce; et suivant telle ou telle prédominance, la maladie prenait l'apparence de la *fièvre Putride*, ou de la *fièvre Ataxique*; quelquefois aussi de la *fièvre Inflammatoire*, chez les sujets dont le pouls étoit large, les

téguments injectés, dans les premiers jours qui suivent le début. Chez quelques individus l'assoupissement dominait, continuait sans interruption, bien qu'à un médiocre degré; il n'y avait point de délire, ou à très peu près; et malgré les plus graves lésions, le calme persistait jusqu'à la mort. C'était assez la forme attribuée au *Typhus*."

Notwithstanding these differences in outward appearance, there was essentially none as to the fundamental disease. After death an affection of the glands of Peyer was constantly observed in the small intestines, more serious as they approximated to the ileo-colic valve, varying with the duration of the disease, and accompanied by an analogous change in the corresponding mesenteric glands. The duration of the disease varied from eight to forty days or more, and its different periods were mixed in those who died from the eighth to the twelfth day. In some lingering cases the characteristic symptoms disappeared some time before death, which was then the result of some secondary lesion.

In those who recovered, the disease was sometimes severe or slight. Of the former, the symptoms were generally less severe, but otherwise the same as in those who died, except as to the permanent contraction of the muscles, which was not observed. From the fifteenth to the fiftieth day, or later, according to the more rapid or slower progress of the disease, the more formidable and characteristic symptoms, such as somnolency, delirium, meteorismus, lessened and disappeared, the number of stools diminished, the thirst became less urgent, the tongue "se dépouillait de l'enduit plus ou moins

brunâtre qu'on y observait assez souvent ; les plaques pultacées qu'elle offrait dans quelques cas cessaient de se reproduire ; elle se rapprochait plus ou moins de l'état normal ; la physionomie devenait plus naturelle, les malades commençaient à prendre part à ce qui les environnait, demandaient quelques aliments ; semblaient en quelque manière renaître à la vie ; sorte de résurrection extrêmement remarquable dans quelques cas où l'amélioration était très rapide. La chaleur diminuait, le pouls était moins accéléré ; enfin toutes les fonctions revenaient peu à peu à leur état habituel.

“Cependant, quelques unes d'entre elles se rétablissaient avec beaucoup de lenteur chez plusieurs individus, et la convalescence en étoit retardée. La chaleur était plus ou moins vive, le pouls continuait à être plus ou moins accéléré, le dévoiement persistait, sans qu'on pût toujours en accuser des erreurs de régime. Un petit nombre d'individus avait des sueurs copieuses et universelles pendant la nuit, et ces sueurs résistaient également aux toniques ou aux excitants, à l'infusion de quinquina, et de menthe, de manière qu'elles ne se dissipaient que très lentement, après 10 et 15 jours de durée.

“Les cas dans lesquels la chaleur, l'accélération du pouls, la diarrhée montraient le plus d'opiniâtreté, étaient généralement relatifs aux sujets qui avaient éprouvé les symptômes les plus graves, pendant un espace de temps considérable ; et il était facile de s'en rendre compte, la gravité des symptômes indiquant celle des lésions et celles-ci devant disparaître avec d'autant plus de lenteur qu'elles étaient plus profondes.”

In those in whom the disease was slight, the diarrhoea was less severe and shorter in its duration, the cerebral symptoms and the meteorismus not so frequent nor so violent, nor so protracted as in the severe cases. But there was not much difference in the mean duration of the disease, "étant de vingt huit jours et un tiers chez les uns, et de trente deux chez les autres. Ce qui indique assez que l'affection se développait avec une extrême lenteur dans quelques uns des cas dont il s'agit; de manière que pendant 3, 4 semaines et plus, qui précédaient l'entrée d'un certain nombre de malades à l'hôpital, ils n'éprouvaient que de légers symptômes, un peu de diarrhée, une diminution peu considérable des forces et de l'appétit. Ces symptômes continuaient encore, de la même manière, à leur entrée, pendant quelque temps; puis un peu de météorisme, de délire, de somnolence, des taches roses lenticulaires ou des sudamina s'y joignaient, et indiquaient, la véritable cause des premiers accidents, qu'il n'était plus possible alors de rattacher à une autre lésion qu'à celle des plaques elliptiques de l'iléum."

The mean age of those who recovered was 21, and of those who died 23. "Les premiers étaient à Paris depuis 14, les seconds depuis 11 mois. D'où il suit que le *pronostic* de l'affection Typhoïde doit être généralement moins grave chez les sujets très jeunes, chez ceux dont le pouls est médiocrement accéléré, large, qui sont à Paris depuis plus d'un an, que chez ceux qui sont dans des circonstances contraires. Toutefois l'affection Typhoïde, quelle qu'en soit l'apparente bénignité, est une affection redoutable: vu qu'on a toujours à craindre dans les cas où ces symptômes sont les plus légers, comme dans

ceux où ils sont les plus graves, la perforation de l'iléum. Le pronostic ne doit donc jamais être favorable, d'une manière absolue, dans cette maladie, sur laquelle on ne peut être entièrement rassuré que quand la convalescence est décidée." (Vol. ii. p. 2—14.)

Before enlarging upon some of the more important symptoms, I shall quote the general result of Louis's investigations into the morbid anatomy of the disease, as the lesions which are more or less characteristic will render the consideration of the symptoms referrible to them more interesting and instructive.

The *pharynx*, in one sixth of the cases, exhibited false membranes, a purulent infiltration in the submucous cellular tissue, but most commonly ulcerations. The *œsophagus*, in about the same proportion of cases, was ulcerated. The *stomach* was rarely increased in volume: its mucous membrane natural in thirteen cases, softened and thinned in nine, ulcerated in four, more or less *mamelonated* and softened in the remainder. The *small intestine* was distended in fourteen cases, but in two only to any remarkable degree. Invaginations were observed in three cases; the mucous membrane, excluding the glands of Peyer, was white in rather less than one third of the cases; red for a variable extent in seventeen; greyish in eleven; of a good consistence throughout in one fifth; softened more or less in extent and degree in the others; the *cryptæ solitariae* more or less developed near the cæcum in one fourth. In *all*, the glands of Peyer were diseased, the more so in proportion to their vicinity to the cæcum, near which the per-

forations always took place. The corresponding cellular tissue was also constantly diseased.

The *large intestine* was distended in more than one half of the cases, and commonly in a remarkable degree, with a natural or increased thickness of its coats: its mucous membrane was white in thirteen cases; red for a variable extent in twenty; greyish in nine; of a natural consistence in one fourth; softened in different degrees for a greater or less extent, and sometimes thickened in the others. "Huit offraient un plus ou moins grand nombre de cryptes lenticulaires, rarement ulcérées: quatre, des plaques dures, petites, arrondies, d'ailleurs semblables à celles de l'iléum: quatorze, des ulcérations, ordinairement peu nombreuses, superficielles et de peu d'étendue."

The *lymphatic glands* were often changed; those of the *mesentery*, corresponding to the diseased glands of Peyer in the ileum, were red, thickened and softened in every case, and this triple alteration presented variations more or less remarkable in the different periods of the disease; those which corresponded to the healthy glands of Peyer presented the same change in one fourth of the cases, but in a less degree. The *mesocolic* glands were also similarly affected, and commonly severely, but not in every case. The *cervical* glands, and those of the *great and little curvature of the stomach*, were sometimes red and thickened to the same degree as were the mesenteric ones, corresponding to the healthy glands of Peyer. The lymphatic ganglions round the biliary ducts were violently inflamed in two cases.

In every case, but four, the *spleen* was more or less affected, commonly enlarged and softened, often four or five times its usual size, and then constantly very soft.

The *liver* was softened in one half the cases, to a remarkable degree in some, and then it was usually pale, contained little blood, and appeared dry on being cut into.

The *bile* was abundant, liquid, reddish or greenish in the majority of cases, sometimes thick. The *gall bladder* contained pus, and its mucous membrane was red and thickened in three cases. The *kidneys* were softened and increased in size in some cases, and evidently inflamed in one. The internal membrane of the pelvis was red and thickened in two cases, and that of the *bladder* in two others; and in a third there was a small ulceration near the meatus. The *parotids* were inflamed only in one case. The *heart* was healthy in rather more than half of the cases, softened in the others, and sometimes to an extreme degree. It was then of a livid red, thin and easily torn, its cavities containing drops of blood mixed with air, or rather this liquid was clotted and not fibrinous; the contrary was the case in those whose hearts were healthy. The *aorta* was of a clear red in those cases in which the heart was soft, and then sometimes its internal coat was softened and thicker than usual. This red discolouration was rare or very slight when the heart was healthy.

The *epiglottis* was red, thickened at its circumference, and lined by a false membrane in two cases; thickened and partially destroyed at its

summit, or laterally in one sixth of the cases. The *larynx* was lined with a false membrane in three cases, and had a small ulceration in a fourth. The *lungs* were natural, or nearly so, in one third of the cases, spleenified or hepatized to a slight extent in the others; and these two lesions were separate or combined. The *pleura* in rather less than half the cases contained from three to thirty ounces of bloody serosity.

The *arachnoid* was lined, for a moderate extent on the upper part of the brain, by an extremely soft false membrane, in 2 cases. The *cortical* substance of the brain was more or less of a rose or red colour in 17, and its *medullary* injected, commonly to a moderate degree, in most of the cases. Both were a little softened in 7, and there was a partial softening in 2. The *cerebellum* presented the same lesions in a smaller number of cases.

The *skin* in 4 cases exhibited deep traces of phlegmonous erysipelas; was thickened, thinned, partially ulcerated or completely destroyed, where blisters had been applied, and in many cases was completely destroyed over the sacrum. The subcutaneous cellular tissue, except in the cases of erysipelas, presented no change but in 2 cases. In 1 there was an abscess below the lower jaw, and in another an emphysema in the neck.

These lesions, which were combined more or less in every case, were not of the same nature, nor depending on the same cause, nor equally frequent in those who died at different epochs of the disease, nor were they developed at the same period.

The more or less direct cause of some of them

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was inflammation, while others appeared to be independent of it, as the pale softening of the liver, that of the heart, the red discolouration of the aorta, at least in the greater number of cases; some instances of the softening of the mucous membrane of the stomach and intestines, the spleenification of the lungs, the effusion into the pleuræ, the different states of the spleen, the general softening of the brain, and the red colour of its cortical substance.

Some of the lesions, as the ulcerations of the pharynx, œsophagus and epiglottis, were not found in those who died from the 8th to the 15th day, and were more frequent in those who died from the 16th to the 30th than in those who died later. Others were generally less marked in this later period.

Louis supposes that this occasionally depended on a retrograde course of the lesions, as such certainly occurred in the glands of Peyer and of the mesentery. The greyish colour of the mucous membrane was not observed in those who died from the 8th to the 20th day, but almost exclusively in those who died after the 25th, this grey colour being one of those through which inflamed organs repass to their natural state.

Of all these lesions, that of the glands of Peyer being constant, (to which may be added that of the mesenteric glands,) Louis regards it as inseparable from Typhus, and as constituting its anatomical character. As it was found in some who died as early as the 8th day; as the first symptoms often indicated an affection of the intestinal canal; and as the lesions of the small intestine were more decided

than those of the colon, which was healthy in a great number of cases, he concludes that the alteration of the glands of Peyer is synchronous with the origin of the disease.

Though the other lesions can only be considered accessory, yet they often occur early, as several of them, especially the different softenings, were more marked in those who died from the 8th to the 15th day than later.

The anatomical character of Typhus becomes more evident by comparing it with other *acute* affections; for, excepting the morbid state of the glands of Peyer, and the ulcerations of the pharynx, œsophagus and epiglottis, which are peculiar to Typhus, the other lesions are common. The only difference is in the proportion of cases in which they occur, and this for some organs only; as in others, the mucous membrane of the stomach and intestines for example, the proportion does not sensibly differ. The ulceration of the pharynx and œsophagus, existing in a small number of cases of Typhus, and in no other acute disease, may be considered one of its *secondary* anatomical characters, and perhaps as much may be said of the ulceration of the epiglottis. That of the large intestines is somewhat characteristic, being much more rare in other acute diseases. With three exceptions, and one example of a small ulceration of the larynx after Peripneumonia, Louis met with no instance of ulceration in other acute diseases. Hence he concludes that Typhus is peculiar, not only in the seat and character of its lesion, but in the profound impression it makes on membranous tissues, termi-

nating in ulceration ; and therefore "Typhus is to acute diseases what Phthisis is to chronic ones."

The alterations of the spleen have also something peculiar in Typhus, as they were observed in all who died, excepting 4, and in all without exception who died from the 8th to the 15th day. They were much less frequent after other affections, in which the maximum of volume attained in Typhus was never observed ; and there was also in this respect a contrast in those who died of Typhus and of other acute diseases, viz. that in the latter the softening of the spleen was more frequently combined with smallness of volume, which was the reverse in the former.

From this account of Typhus, it appears in Paris to be a very fatal disease, ushered in by the usual symptoms of fever, attended generally within the first twenty-four hours by pains of the abdomen and diarrhoea, to which succeed a disproportionate degree of debility, somnolency, delirium, involuntary and frequently bloody stools, meteorismus, petechiæ, cough, tremors, spasms, a sunk supine posture, stupor, indifference, aberration of mind or raging delirium, and death ; or the gradual subsidence of the more formidable symptoms, followed sometimes by general sweat, and a lingering convalescence ; and on examination after death, there is invariably found a diseased state of the glands of Peyer and of the corresponding mesenteric glands, frequently ulcerations of the pharynx, œsophagus and epiglottis, which are not observed in other acute diseases ; distention and ulcerations, partial and limited, in the colon, and an enlargement and

softening of the spleen. It is consequently, according to the opinion of Louis, essentially a disease of the glands of the ileum, with a variety of consecutive affections; and the state of the intestinal canal merits, therefore, particular attention.

Diarrhœa was absent only in 3 cases: in the others it varied as to the period of its occurrence, its degree, more or less limited seat, and the nature of the excretions.

I may remark that Louis's observations are founded on the examination of 46 cases, the nature of which admitted of no doubt. Of these,

10 died from the 8th to the 15th day.

7 ————— 16th to the 20th day.

20 ————— 20th to the 30th day.

9 — after the 30th day.

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In 40 of these cases he had precise data as to diarrhœa, and 22 of them had more or less frequent liquid stools from the first day of the disease. In 15 other cases, 9 had diarrhœa from the 3rd to the 9th day; and 6 from the 11th to the 14th. In the 3 cases in which there was no diarrhœa, death occurred after '13 and 14 days' illness, and hence he infers that the copiousness of the diarrhœa was not the principal cause of the mortality in the cases in which it existed. This also would appear from the fact, that out of the 9 who died after the 30th day, 7 had diarrhœa from the commencement.

It had existed, in 3 of the 20 who died from the 20th to the 30th day, for 12 and 14 days and 5 months previous to the commencement of Typhus; but no

other symptom of Typhus attended it; and therefore Louis infers that this antecedent diarrhœa did not depend on a disease of the glands of Peyer, as they presented none of those characters after death which might have been expected had the diarrhœa depended on them.

In 32 cases in which the degree of the diarrhœa was noted, 18 of the patients had from eight to ten or more stools in the day; 7 had from four to six; and 7 only one or two stools.

The stools were generally thin, forming with the urine a turbid fluid, at the bottom of which small yellowish bodies were observed, rarely solid particles, excepting in those who died after the 30th day. Instead of the yellow colour which was the most usual, the feculent matter in 2 cases had the consistence and the brownish tint of coffee-grounds. Two passed transiently more or less pure blood; and in 4 only was any mucus observed.

The coffee-ground and sanguineous stools Louis considers as of great importance with relation to the diagnosis, as they are seldom or never met with in any acute disease, excepting Typhus, though there was nothing remarkable in the lesions of the intestines in the cases in which they occurred.

As the glands of the ileum, if not in all, at least in nearly every case, were the only parts of the intestines affected from the first, they were the only lesion to which the diarrhœa could be referred, for though the intermediate mucous membrane and that of the colon were commonly sooner or later affected, this was not invariable; so that the diarrhœa had sometimes a *double* origin, viz. the condi-

tion of both intestines, or only a *single* one, that of the ileum. This last was the fact in 11 cases where diarrhœa had existed from the commencement, and in which the mucous membrane of the colon was unchanged; hence the duration and intensity of the diarrhœa does not indicate with certainty any lesion of the mucous membrane of the large intestine; and except those cases in which there are simultaneously pains along the transverse arch of the colon, gripes and frequent stools, Louis thinks we cannot affirm that diarrhœa has its seat in it.

These observations do not carry conviction to my mind of their correctness, for the absence of morbid lesions in the mucous membranes does not necessarily imply a previously healthy state of them during life. A simple excitement of the capillaries might exist, attended with increased excretion, and no trace of its existence be perceptible after death, as we observe in the exanthemata on the surface of the body. Louis himself (vol. ii. p. 246.) mentions a case of Erysipelas which left no trace of its existence after death. There is reason also to believe that in Pleurisy and Peritonitis the redness of inflammation passes from a diffused to a mottled appearance from its subsidence in particular vessels; and it is too much to expect that morbid anatomy can enable us to trace every indication of morbid action.

In the cases of Typhus which were not fatal, 57 of which were severe, and 31 slight, diarrhœa was equally a prominent symptom. Of the first class, 24 had diarrhœa from the commencement; 5 had it from the 2nd day; 3 from the 3rd; 4 from the 4th, &c. In 2 cases it did not appear till

the 18th and 30th day. In 14 patients the stools were, for one or two weeks or longer, from 8 to 20 daily: in 22 others, from 2 to 4, and moderate in the remainder. Its mean duration, in all of them, was 26 days; but in those who had it severely, it was 33; and in those who had it feebly, 21 days.

The character of the evacuations was not essentially different from that of the fatal cases. In 3 cases, one of which had but a trifling diarrhoea, there was a considerable quantity of blood, for 3, 4, or 6 days consecutively. In 2 of the cases, the blood was clotted; in the other, that of a girl, whose symptoms were very severe, with intense meteorismus, but whose catamenia had not been irregular previous to the Typhus, the stools were extremely foetid, black, pultaceous, and, during the two last days of the six that the hæmorrhage lasted, as if composed of putrid blood. These three persons had had epistaxis, and one severely, which indicated a hæmorrhagic disposition, considering the few cases in which the stools were sanguineous. The hæmorrhage in these cases occurred on the 16th, 26th, and 32nd days of the disease, which had progressed slowly, and, at first, under slight appearances.

In the 31 *slight* cases the diarrhoea was less in degree and duration, the average continuance not exceeding 15 days. In about one third it began with the disease; was wanting in 2 cases, and only 1 had slight sanguineous stools; so that the duration and intensity of the diarrhoea was proportionate to the violence of the disease.

It may be judged from this detail how prominently diarrhoea stands as a symptom in the Typhus

of Paris. Out of 128 cases, it came on the 1st day in 56 of them; and out of 97, it appeared in 21 from the 3rd to the 9th day. In 87 cases, 32 had from eight to twenty stools daily; 29, from two to six; and in 28, it was moderate. It was absent only in 5.

As the conditions connected with this leading symptom are important, and some of the observations of Louis upon them highly interesting, I shall briefly allude to both.

I may first observe, that pains in the abdomen were felt in all the fatal cases of which Louis had information as to this symptom, sometimes over the whole abdomen, commonly affecting the iliac fossæ, or oftener the hypogastrium, rarely the transverse arch of the colon; sometimes like colic, or more frequently dull. In the 57 who recovered after a severe disease, 5 had no pain; and in 17 it was felt the first day. In the 31 who had a slight disease, it was absent in 10, and was generally less severe, so that the intensity of the abdominal pains, like the diarrhœa, was proportionate to the violence of the disease.

The meteorismus, as a symptom, was present in 34 of the 46 fatal cases, considerable in one half of them; variable as to the period of its development, in most cases continuing till death; increasing or lessening: in 2 cases only, in which it appeared after the 38th and 65th day, being transient in duration. It existed in 40 of the 57 severe cases which recovered, and in 15 of the 31 slight ones. Louis could not assign any evident cause for it. He does not refer any particular symptom to it, but when the distention was great, merely says, that "*devait être la cause d'un*

profond malaise, former un grand obstacle à l'action des viscères de l'abdomen et de la poitrine."

In the *duodenum*, the only lesion peculiar to Typhus, as compared with other acute diseases, was a slight ulceration near the pyloric valve in 2 cases out of 22, the only ones included in Louis's notes.

There was nothing remarkable in the volume of the *small intestine*, the slight meteorismus observed in it not depending on the ulcerations, as these were few, superficial, and of small extent in those who died from the 8th to the 15th day; the proportion of the cases of meteorismus being greater in them than in those who died from the 20th to the 30th day, in whom the ulcerations were more marked.

Round worms were found in two cases in the *small intestine*; but this affords no idea of the proportion of cases in which they occurred, as several passed them during life, and no note was taken by Louis of the frequency of their occurrence.

Mucus was found in nearly all the cases, especially in the *duodenum*. The bile was abundant and liquid, reddish, or of a clear yellow, or orange in those who died early, not throughout the whole extent of the intestine, but in parts where the mucous membrane was red; and Louis supposes the orange tint was owing to an exudation of blood.

The proportion of cases in which the mucous membrane preserved its natural *white* colour was greater as the disease was more speedily fatal; but it was the reverse with the *grey* colour, traces of which were only found in 2 cases of those who died before the 20th day. It existed nearly throughout the whole extent of the intestines in 7 of the 20 who died between the

20th and 30th day ; and in 4 of the 9 who died after the 30th day. The *red* colour was observed in one third of the cases, and nearly in the same proportion in each of the periods ; six times throughout the whole extent of the mucous membrane : ten times in one half, one third, or one fourth of its extent, and then almost always in that portion nearest the cæcum. The *yellow* colour was observed in four cases only, and was attributable to a biliary stain. So that the *grey* colour was peculiar to those who died after the 20th day ; and Louis considers it as a change from the red. This supposition, he says, is the more probable, “ si l'on se rappelle que la dégradation dont il s'agit à lieu, à la même époque, pour les glandes mésentériques, les plaques elliptiques de l'iléum, et même pour la membrane muqueuse de l'estomac dans les cas où elle est mamelonnée, et dans quelques autres encore.”

As to the *consistence* of the mucous membrane of the small intestines, it was natural in 9 out of 42 cases, and more or less softened in the others.

The glands of Peyer of the ileum were more or less diseased in every case throughout an extent of from two to eight feet ; and in one case throughout the whole extent of the ileum. This affection appeared under two distinct forms. The *first* was in different degrees in the same individual, the most severe near the cæcum, and the least more remote from it. The diseased state of the glands was progressive from the cæcum towards the duodenum, not simultaneous in different parts ; and the transition from the healthy to the diseased patches was in some instances gradual, but most often abrupt.

In passing from the first to the last towards the cæcum, the appearances observed were as follows: The least diseased glands were slightly prominent, of a pale or light rose colour; the greyish points, indicating the orifice of the crypts, had disappeared, and the softening of the mucous membrane was slight: then came glands, the hypertrophy, softening and redness of which were more marked, the hypertrophied state being, in this first degree, the effect of the thickening of the mucous membrane, and of the subjacent cellular tissue. The next in succession were more red, thicker, larger, softer, uniform, not mamelonated, without open orifices; the crypts no longer distinct, the submucous cellular tissue being also thicker and redder; and finally, the glands near the cæcum were ulcerated; the ulcerations at first superficial, with an incomplete destruction of the mucous membrane; then deep, with an entire destruction of it, sometimes from the union of several small ulcerations, or the progressive enlargement of one. In some of the glands, the submucous cellular tissue which formed the surface of the ulcerations was not destroyed, but appeared in the same state as that of the hypertrophied glands. In those nearer the cæcum it was more or less destroyed, and the muscular coat, which was red and thickened, was exposed, its fibres being very distinct. These in some cases were destroyed for a given extent, and the peritoneal coat giving way, a perforation took place, in one or two points in the same subject. This occurred in 8 of the 46 cases, and always *within ten inches* of the ileo-colic valve. Sometimes all these

grades of diseased structure took place very rapidly, so that the perforation, which is the last grade, in one instance happened on the 12th day. In those who died before the 15th day, the ulcerations were generally small, not deep, nor numerous; or they were altogether absent, as in two cases in which the glands were red, hypertrophied and softened. In those who died later, commonly after the 30th day, the glands presented a mixture of red, grey, and blue; or were of a greyish and blueish colour without redness; less hypertrophied, and more consistent, which Louis conceives indicated a *retrograde* course, from a diseased to a sound structure; and the same changes were observed in the submucous tissue. In some instances the surface of the ulceration appeared shining and polished, covered with an extremely fine pellicle, as transparent as serous membrane, and continuous with the submucous tissue at the edges of the ulceration. This was a *cicatrix*; an attempt at reparation of some duration, and only observed in those who died after the 37th, 40th, or 43rd day.

The *second* form consisted in a peculiar change of the submucous tissue, which was transformed into a homogeneous unorganized matter, of a faint rose or yellowish colour, dry and shining when cut into, more or less resistant or friable, and two or three lines in thickness. This matter was developed in the substance, not on the surface of the submucous tissue. It was observed also in the small irregular patches (*plaques*) in the intervals of the glands of Peyer, sometimes like pimples, from two to three lines in diameter and height. This peculiar

diseased state of the glands was observed in 13 cases out of the 46: in 3 complicated with the *first* form of diseased structure; and in 10 existing singly. "Qu'on pourrait appeller *dure* par opposition à la première, qu'on appellerait *molle* (*plaques dures et plaques molles*.)" The *cryptæ solitaria*, or glands of Brunner, were enlarged, red, and in three cases ulcerated near the cæcum.

In the *large intestine* meteorismus was observed in 22 cases out of 39, and in 16 of these it was considerable. "Alors il s'arrêtait ou un peu avant ou après l'S du colon: et dans quelques cas où cet intestin fut mesuré dans trois points à peu près également éloignés, entre cette dernière limite et le cæcum, il avait, à partir de celui-ci, 4 pouces et demi, 5 pouces et demi et 3 pouces de développement, distention énorme!" The thickness of the coats was not diminished, but sometimes increased, at the expense of the muscular and mucous coats, without any trace of inflammation; and Louis supposes it is attributable to the reaction of them on the gas which distends them, and the meteorismus not to depend on any appreciable lesion of the mucous membrane. It was most common in those who died from the 20th to the 30th day. The same varieties of colour were observed in the mucous membrane as in that of the small intestine. The *grey* was not perceived in any who died before the 20th day, but was found in 9 who died later. The consistence of the mucous membrane was natural in rather less than one third of the cases, and was diminished in the others. The *cryptæ* were enlarged, and "*plaques dures*" like those intermediate

to the glands of Peyer in the small intestine, were observed in four cases, but less extensive. Ulcerations were observed in 14 cases, and Louis says, they appeared to have "un double siège : les cryptes et leurs intervalles." The only lesion peculiar to Typhus was the "*plaques dures*," but as these were observed only in a few cases, they cannot be considered essential. The meteorismus and the ulcerations were extremely rare in other diseases, and the first may be considered as in some degree characteristic of Typhus.

The *mesenteric glands*, corresponding to the ulcerated, or to the red and softened glands of Peyer, were more or less changed in volume, colour, and consistence in every case, their diseased state being more marked in proportion to their vicinity to the cæcum ; but they varied in appearance according to the period in which the disease was fatal.

In those who died from the 8th to the 15th day, they were enlarged, sometimes near the cæcum to the size of a large filbert, of a light rose colour, with streaks of deep red internally, and very soft, so that some were easily crushed between the fingers, the intensity of the red deepening towards the cæcum. In those who died between the 15th and 20th day the size and consistence were the same, the colour was sometimes of a reddish brown, and some near the cæcum had yellowish points, indicating a concrete pus, corresponding to those glands of Peyer which were most ulcerated. In those who died between the 20th and 30th day, some of the glands were greyish, blueish, or of a violet colour, less in size, and not so soft, indicating a

return towards a natural state, and pus was more evident in some cases. In the 9 who died after the 30th day this violet-grey or blue colour was the predominant one, so that in 2 cases only were the glands red, and in both death was the consequence of a perforation: the size and softness of the glands were less, showing a perfect correspondence with the retrograde course of the glands of Peyer.

The mesenteric glands, corresponding to the healthy glands of Peyer, were also affected in 10 cases, but in a less degree, being increased in size, more or less red, but without any diminution of consistence. In 4 of the 10 cases the mucous membrane was healthy. The *glands of the meso-colon* underwent the same changes, except that pus was never found in them. Those round the biliary ducts were more or less enlarged, red and softened in 2 cases; those along the two *curvatures of the stomach* were affected in 4 cases out of 5 in which their condition was observed, being large and of a violet red in 2 cases along the little curvature: of the same size, red and greyish in 2 others along the large one; but there was no essential relation between their condition and that of the mucous membrane of the stomach. "Ces deux organes peuvent être altérés isolément et sans doute par les mêmes lois, ce qui confirme ce qui a été dit précédemment au sujet des glandes lymphatiques des autres régions." Louis infers that the glands of the stomach are rarely affected in Typhus, from the few allusions in his notes to their diseased state, as he must have observed and

noted any considerable change in them, from the particular manner in which he made his examinations. The *lumbar* glands were large and firm in 2 subjects, 1 of whom died of phlegmonous erysipelas in the lower extremities, coming on at an advanced period of the disease. In another case of the same kind the *inguinal* glands, corresponding to the affected side, were red and enlarged, and one of them contained pus; and the same pathological state, without pus, existed in three others, who had had blisters on the lower extremities. Of 12 subjects whose *cervical* glands were noted, 9 had them more or less red and enlarged without any sensible softening. Of these 9, 6 had ulcerations of the pharynx or epiglottis, but in 1 of the 3 others the mucous membrane of the pharynx and of the air-passages was healthy, and only slightly red in the 2 others. In 1 individual who had a large ulceration on the right shoulder, the consequence of an eschar of the skin, the *axillary* glands were red, and enlarged nearly to the same degree on both sides.

These affections of the glandular system were much *less frequently observed* in those who died of other acute diseases. The *mesenteric* glands were red and enlarged in 6 fatal cases of Variola, Scarlatina, Peripneumonia, Erysipelas of the lower extremities, and a little softened in 1 of the cases of Variola. But in none was the change in the glands to be compared to that which "la seconde moitié du mésentère présentait, à la suite des affections typhoïdes." The *cervical* glands were more or less red and enlarged in 4 persons, 3 of whom had had eruptive diseases. In no case was any

affection of the glands round the biliary ducts observed, nor was there any essential relation between the state of the glands and the corresponding mucous membrane; hence their diseased state depends on the same general causes which influence other lesions, and is independent of the mucous membrane to which they are connected.

From the facts he has collected, Louis infers that the softening and increased size of the mesenteric glands, to any remarkable degree, is peculiar to Typhus; that though this lesion is consecutive to that of the glands of Peyer of the small intestine, it is not less as important an anatomical character, as the ulceration and inflammation of those glands themselves, occurring, like them, in all cases and with analogous shades of difference, according to the period of death; that *Typhus exhibits a marked predisposition to affect the mesenteric ganglia, as well as those of other parts*, especially those of the neck and those round the biliary ducts.

The *spleen* was affected in all but 4 of the 46 fatal cases, and in 17 it was three, four, or five times its usual size, the proportion of cases in which this occurred being greatest in those who died before the 30th day. In the others it varied from the natural size to more than double its usual dimensions. It was softened in 34 cases, and in 7 of them to an extreme degree, “*se laissait pénétrer sans effort, et son parenchyme se réduisait avec la plus grande facilité en une sorte de putrilage.*” There was no instance of this extreme degree of softness in those who died after the 30th day. On the contrary, it more often was of a natural size and

consistence in those who died after the 30th day, than in those who died earlier. These effects were not always coexistent. In the 7 cases of extreme softness the size was excessive, but either might exist without the other: the excess of both was most frequent in those who died soon. Louis infers that the change it undergoes in these respects takes place soon after the commencement of the disease, and probably exists in every case, as those in which it was not observed were of persons in whom other lesions had retrograded, and the spleen in them had probably followed the same course. It varied also in colour. The nature of these lesions Louis thinks is inscrutable, and he gives several reasons why they are not referable to inflammation.

The spleen was much less affected in other acute diseases. In 32 out of 83 cases, it was enlarged in 10 and softened in 25 instances, after Peritonitis, Scarlatina, Peripneumonia, sudden death, &c. But there was a contrast between the effect on the spleen in these diseases and in Typhus. In the first it was more frequently small than large, and its softness more commonly allied to a diminution than increase of its size; and in no instance did the maximum of its development ever reach that observed in Typhus; whence Louis thinks, "que l'altération de la rate a quelque chose de special et de caractéristique chez les sujets atteints d'affection typhoïde."

There was nothing peculiar to Typhus in the appearances of the *liver*; for though more often affected, especially softened, than in other diseases, the softness was as great in the latter as in the former.

The *gastric symptoms* were noted in 30 cases, and in 20 of them there was vomiting, nausea, or pains in the epigastrium, though in 11 only was there any lesion of the mucous membrane of the stomach. In 5 cases in which the pains and bilious vomitings existed together, the mucous membrane was diseased. The vomiting in these cases came on at an advanced period of the disease, and the two symptoms Louis considers as clearly indicating in Typhus a consecutive lesion of the mucous membrane, the more severe in proportion to the duration of the vomiting. Of the 57 who recovered after a *severe* disease, 43 had gastric symptoms, 30 had pains at the epigastrium, 19 nausea, and 20 vomitings: the pains were generally moderate, and the matter vomited greenish and bitter. In the 31 *slight* cases the gastric symptoms were less in frequency and duration, occurring in 15 only.

An examination of these symptoms and lesions in other acute diseases led to the same general conclusion, viz. that pains at the epigastrium, existing with bilious vomiting of some duration, indicate a serious lesion of the mucous membrane of the stomach, coming on in the progress of the disease. Pains alone do not indicate it, the nature and seat of them being often difficult to appreciate. The degree and frequency of the disease of the stomach are proportionate to the violence of the febrile action.

The lesions of the mucous membrane of the stomach in the fatal cases of Typhus were softness with or without thinness, ulceration and a *mamelonated* state. Softening with thinness occurred in

one fifth, and under circumstances which induced Louis to conclude that a protracted state of the disease was not favourable to its development, but that the lesion probably contributed to accelerate the fatal termination. It existed under a continuous form, or in bands; and in the latter case there was sometimes a more or less extensive destruction of the mucous membrane and the corresponding cellular tissue.

Ulcerations, exactly circumscribed and limited in extent, were only observed in 4 cases. The mamelonated state of the mucous membrane was found, in 13 cases, more or less extensive: it was more frequent in those who died from the 8th to the 20th day than later. In 13 the mucous membrane was perfectly healthy.

The *pharynx* was ulcerated in about one sixth of the fatal cases; and as this lesion was not observed in other acute diseases, Louis considers it as one of the *secondary* anatomical characteristics of Typhus. It was sometimes complicated with a purulent infiltration into the submucous cellular tissue, or with a false membrane, extending from the pharynx into the air-passages.

The *œsophagus* was also ulcerated in about the same proportion of cases, or one sixth, the ulcerations occupying a part or nearly the whole of the mucous membrane, and this lesion was also peculiar to Typhus. The muscular coat was hypertrophied in two cases. The symptom referable to these lesions was a variable degree of difficulty in deglutition; but it was sometimes masked by the presence of delirium. Patients during delirium sometimes

obstinately refuse to drink, without giving any reason, and the pharynx in these cases is more or less affected, so that the refusal of liquids may, under these circumstances, be taken as an indication of the state of the organs of deglutition.

The functions of the *brain* were affected in every case of Typhus, and therefore the lesions and symptoms merit a particular attention.

In 3 cases there was a slight effusion of clear serosity in the upper part of the *arachnoid*; in another a turbid and more considerable effusion, with some flocculent albumen adhering to its internal lamina; and in a fifth case, a still softer false membrane lined the upper part of the internal surface of the *dura mater*. In neither case had the *arachnoid* lost its transparency. In 4 cases it was dim and opaque at the upper part, without effusion, and in one of them it was thickened. These last lesions Louis considers to have been anterior to the attack of Typhus.

The cellular tissue beneath the *arachnoid* was infiltrated in 28 cases. The infiltration was considerable in 4 persons, who died after a protracted agony; in the others it was slight. In no case was there any adhesion between the two lamina of the *arachnoid*.

The *pia mater* was injected in rather less than one half of the cases, and to a remarkable degree in 11; more frequently in those who died from the 8th to the 20th day. The superior cerebral veins were distended with a great quantity of blood in one fifth of the cases, most commonly when the *pia mater* was injected; and bubbles of air were observed in one case.

The *cortical* substance of the brain was of an uniform rose colour throughout in 17 cases, without any change of consistence; dotted with blackish points in 1, and bordering on a violet colour in 2 others. It was most frequent in those who died from the 8th to the 15th day, than after, being observed in one half of the first, and only in a fourth of the others.

The *medullary* substance was injected in every case but 7, generally proportionate to the discolouration of the cortical. The injection was great in 7, 4 of whom died before the 15th day, and none after the 30th. It was not very considerable in the others, and was never absent in any case of those who died between the 8th and 15th day.

Louis imagines that no one will be disposed to attribute the injected state of the medullary substance to inflammation; "mais il n'en sera peut-être pas ainsi de la couleur rose de la substance corticale, et l'on sera d'autant plus porté à la croire inflammatoire que les symptômes d'*irritation* auront été plus marquées." He thinks, however, that symptoms cannot aid us in the solution of the question; that they throw little light on the seat and nature of diseases, from their extreme variability in the same disease; that delirium, so common in Typhus, depends on different causes; that it would be rash to attribute it invariably to inflammation; and that cerebral symptoms, more or less severe, existed in almost every case, while the affection of the cortical substance occurred in only one half of them. The uniformity of the colour

itself, and the natural dimensions and firmness of the cortical substance, are against the idea of inflammation, because this constant uniformity of an inflammation, always the same in degree, giving rise but to one effect, that of a change in the colour of the organ in which it is seated, producing neither softening nor thickening of its tissue, occurs in none of the viscera, the inflammation of which is best known. It might be argued, that it is the effect of a recent inflammation, occurring just before death; but even then the uniformity of colour is an objection; and, on the supposition that the discoloration occurs a short time previous to death, Louis is inclined to consider it the effect of a simple congestion, analogous to the injection of the medullary substance, and of the pia mater; an opinion which is rendered probable from the symptoms, and from the facts relative to those who die of other acute diseases.

The consistence of the brain was somewhat increased in 6, and diminished in 5 cases. The first, Louis gives sufficient reasons for not considering as a lesion; and the last he supposes was analogous to the softening of the liver and heart. In 2 cases there was a partial softening. Effusions into the lateral ventricles were observed, but always slight. The cerebellum was affected less frequently than the cerebrum; and the spinal cord, examined in 6 cases, presented nothing but a slight diminution of consistence in 1 of them.

The same lesions and conditions of the brain, and nearly in the same proportions, were observed in those who died of other acute diseases; so that

none of them can be considered peculiar to Typhus. This result, little to be expected from the state of the cerebral functions in the two classes of diseases, confirms Louis in the idea that the infiltration beneath the arachnoid, the injection of the pia mater, the rose colour of the cortical substance, are trifling lesions in themselves, and undoubtedly the products of the last moments or days of life.

With relation to the cerebral *symptoms*, headache occurred in all but 4 of those who died of Typhus, almost always uninterrupted, and not limited to the evening exacerbations, coming on with the first symptoms. It ceased on the supervention of delirium, even when the patient complained of pains elsewhere, and it did not return on the subsidence of the delirium. Of the 57 who recovered after a severe disease, 2 only were free from it: its mean duration was from 8 to 10 days. All but 1 of those who had a slight disease suffered from it, but in a less degree.

Somnolency existed in nine tenths of the cases. It came on the 1st day in 4; from the 3rd to the 16th day in 5; later and always before the delirium, except in 1 case, in the others. It was generally continuous, unless during delirium, and was accompanied by a state of indifference, and stupor in half the cases. Of the 57 who recovered, all but 8 had it, but to a less degree; and of the 31 who had a slight disease, only 19 were affected with it, but in them it was much less considerable, shorter and later in its development. In other acute diseases this symptom was not to be compared to its character in Typhus, even of a mild kind;

and it is therefore one of its most characteristic symptoms.

Delirium occurred in three fourths of the fatal cases, accompanied by extreme agitation in 12 patients, who were obliged to be restrained by the strait waistcoat. This violent form was most frequent in those who died between the 8th and 20th day. Ten of the 12 uttered continual cries, especially at night; and as a false membrane in the air-passages was only found in 1 of them, Louis thinks we have from this circumstance a clear proof of the inertness of occasional causes where predisposing ones do not exist. The larynx and epiglottis, of one whose vociferations were continuous for 15 days, were healthy.

In the other cases, the delirium occurred principally at night; and the patients, on being questioned, would for a while return intelligent answers. Some, amid the most formidable symptoms, would say, they were well, a species of perversion in the sensations and judgement which has been generally considered a most unfavourable symptom, and which Louis never met with in those who recovered. The delirium sometimes came on the 1st day, but on the average about the 10th in those who died from the 15th to the 20th; and about the 15th in those who died later. Its mean duration was about 10 days.

The facts bearing upon the relation between the delirium and the state of the brain are, that, of 12 persons who had no delirium, or only momentarily for 24 hours in the course of the affection or during the 2 or 3 last days of life, 4 had the

cortical substance more or less of a rose colour. In 6 others the brain was perfectly healthy; in 1 very much injected, with a slight softening of one of the optic thalami; and in another, the entire brain was rather more consistent than usual. Louis infers that such a variety of appearances in those who had, as he says, no delirium, would lead to the apprehension of our not being able to find, in the appreciable lesions of the brain, any solution of the cerebral symptoms; and that we must suppose its different alterations take place in the last moments of life. These inductions are confirmed by the state of the brain in the 12 persons whose delirium was most violent. In 5 the cortical substance was of a rose colour; in 5 others, the entire brain was healthy; in 1 rather soft; and in another, much injected. The condition of the brain in these 12 was little different from that of the former, while the state of the cerebral functions was in the strongest contrast. Out of the 24, the consistence of the brain was increased in 2, and 1 had violent delirium, and the other unimpaired intelligence.

The same want of relation existed between the cerebral symptoms and the state of the mucous membrane of the stomach and of the large intestines, the softening of the liver, spleen, and heart; and consequently, as there was but one invariable lesion, that of the glands of Peyer, Louis infers that *this* was the cause of the delirium and the somnolency especially; this last symptom existing in a very few persons who died of other acute diseases, while the lesions of the mucous membranes were almost as frequent in those diseases as in Typhus.

Of the 57 who recovered after a severe disease, 39 had delirium, but generally less intense, variable as to its commencement and duration. It was violent and vociferous in 5, and required the strait waistcoat. During the rise of the fever, the delirium did not run on any determinate subject, but consisted rather in the impossibility of the patient making a regular use of his intelligence. But when the fever had declined considerably, there was occasionally a fixed illusion. The delirium always ceased gradually, and only one of the patients, after recovery, had any derangement of the intellectual faculties; a fact which Louis considers is against the idea of any serious lesion of the brain occurring in Typhus, as such a lesion, especially inflammation of its mass, would have left more frequently consequences connected with some change in the intelligence or motions; and hence the symptoms, he thinks, confirm him in the conclusion derived from the examination of the brain itself, viz. that the delirium in Typhus cannot be explained by any *appreciable lesion* of the brain. Of the 31 who had a slight disease, the delirium was only observed in 3 cases; lasting 1, 2, and 7 days.

The delirium observed in other acute diseases he ascribes to the febrile action attending it, as this was the only circumstance common to the cases in which it occurred; and as the frequency, violence, and duration of the delirium were proportionate to the fever.

Spasms, under the form of rigidity and an alternation of contraction and relaxation of the muscles, occurred in one third of the fatal cases, seated in the

muscles of the upper extremity, of the neck, face, and diaphragm. In 4 persons the upper extremities were permanently contracted for 1, 3, 5, and 15 days before death. No appreciable difference was observed in the brain of those who had, and those who had not spasms. Of the 57 who recovered from Typhus, only 6 were affected by them, and in no case was there rigidity of the arms or neck. Louis, therefore, considers them as most unfavourable prognostics, and rigidity as a mortal symptom. Out of 500 cases of other acute diseases, excluding *Colica pictorum*, he met with spasmodic symptoms only in 4 cases, viz. *subsultus tendinum* in 1 case of Peritonitis and of Peripneumonia, and *cramps* in 2 of Enteritis.

If, therefore, the great difference with relation to spasms, in those who die, and those who recover, of Typhus, makes them of importance in prognosis, their extreme infrequency in other acute diseases, renders them as useful an auxiliary in diagnosis in doubtful cases of a grave nature. “Les mouvements ou les roideurs spasmodiques forment donc, comme l’assoupissement, un des signes les plus précieux de l’affection typhoïde, en même temps qu’ils indiquent que si le trouble des fonctions cérébrales est généralement proportionné au mouvement fébrile, il reçoit des modifications importantes de l’organe affecté.”

Weakness, or loss of power, which is one of the first effects of all acute diseases, is much greater and more protracted in Typhus than in any other, and consequently is one of its peculiar characteristics. It was so early in some cases, that the

patients were obliged to take to bed the 1st day, or to desist from their usual occupations, but it varied much as to the period of its development and degree. Some were in a short time sunk to an extreme degree of helplessness, while others were able to rise from bed and assist themselves. One man, who died on the 25th day, was able to work for the first fortnight, and to get out of bed on the day of his death. When declared, it rapidly increased, and the patient was unable in a short time to minister to his own wants, or to change his position; so that he required to be moved to avert the effects of constant pressure in his supine and inert posture.

Louis asks to what cause this extreme prostration in Typhus is to be referred? He thinks that it is attributable either to the special lesion of the glands of Peyer acting sympathetically upon the brain, or to the cause of that lesion. He admits that when the weakness appears at an advanced stage of the disease, it may to a degree be explained by the state of the organs, and the long disturbance of their functions, though we do not observe an equal degree of prostration even in the last stages of other acute diseases. It was as great in those who recovered from severe Typhus, as in those who died. Out of 47, one third were obliged to quit their occupations, or take to bed from the first. It was less in those who had the disease slightly; "*et c'est en grande partie d'après la différence de l'état des forces que j'ai divisé les malades en deux groupes. Toutefois la perte des forces chez les 31 sujets dont il s'agit, était généralement très*

supérieure à celle qui aurait eu lieu dans toute autre affection inflammatoire, à égalité de fièvre."

The other acute diseases in which debility was most remarkable were Peripneumonia, especially when accompanied by diarrhœa with a serious affection of the mucous membrane of the stomach and intestines; and Erysipelas of the lower extremities.

Pains in the limbs and loins, generally slight, were almost universal from the first in every case of Typhus.

With regard to the symptoms connected with the *organs of sense*, the details furnished by Louis are not so full as could be desired. Epistaxis was occasional, but productive of no relief. Of 34 severe cases, it occurred in 27; and of 24 slight cases it occurred in 11; but it was met with in Peripneumonia and other diseases.

The conjunctiva was injected, the eyes painful, and the sight dim in some cases; the lids spasmodically closed in 4 of the fatal cases only. Of 30 fatal cases, 11 were affected with noise in the ears; 20 with a greater or less dullness in hearing; and 2 with pains in the ear. The dullness in some passed into absolute deafness. In 45 who recovered from severe Typhus the same symptoms were observed; 33 had dullness of hearing, and some to an extreme degree. It was less frequent, and less in degree in the slighter cases.

Petechiæ (*taches roses, lenticulaires*) were observed in 26 out of 35 fatal cases, more or less numerous, on the chest, abdomen, limbs, face, and back; appearing in half the cases, from the 6th to

the 9th day. In 1 case they were elicited by a warm bath. Louis considers them *secondary* symptoms; but from their frequency in Typhus compared to other diseases, as being in some degree specific, like the lesions of the spleen.

Of the 57 who recovered, all had Petechiæ but 3. In some only 5 or 6 were observed, while in others they were abundant. The eruption was successive; often going off gradually, and its mean duration about 8 days; lasting, however, sometimes from 3 to 15. It came out in 2 on the 6th day; in one third on the 10th; and in 6 from the 20th to the 30th day. It was observed in all of the 31 slight cases, which induces Louis to think that it is *invariably present* in Typhus; and that the cause is special, different from that of the other secondary symptoms, the frequency and severity of which are always proportionate to the violence of the disease, and the febrile action.

Petechiæ were observed in 12 of 57 cases of other acute diseases; but the eruption was very slight, viz. in 1 of 2 cases of fatal *Peripneumonia*; in 2 of 12 cases of *Diarrhœa*; in 1 of 3 cases of *Rheumatism*; in 3 of 8 cases of *Pulmonary Catarrh*; in 1 of 4 cases of *Gastro-enteritis*; and in 4 of 10 cases of the *Embarras Gastrique*.

I am uncertain what particular affection of the skin, whether Miliaria, Lichen, or Urticaria, is implied by the *Sudamina* of Louis, or if his description can apply to either separately. It may include Miliaria and a febrile state of Urticaria. " Ces vésicules, formées par une fluide limpide et le soulèvement de l'épiderme étaient petites, arrondies, de la

largeur d'un quart à trois quarts de ligne : plus larges, ou d'une à deux lignes dans leur grand diamètre, quelquefois plus, oblongues comme les larmes, dont elles avaient l'aspect quand leurs dimensions étaient considérables. Généralement plus nombreuses au cou et dans le voisinage de l'articulation scapulo-humérale que partout ailleurs, elles couvraient une grande partie du corps dans un cas, où elles étaient fort aplaties ; et dans leur intervalle, l'épiderme s'enlevait par le plus léger frottement. Les sudamina ne furent pas, à beaucoup près, dans un rapport constant avec les sueurs, ils étaient quelquefois en raison inverse de celles-ci, nombreux quand elles avaient été peu abondantes, et réciproquement. Les sueurs n'étaient donc pas la circonstance la plus importante de celles qui concouraient à leur développement, en sorte qu'il faut admettre qu'ils tiennent à une affection de la peau, non encore appréciée jusqu'ici. Sous ce point de vue les sudamina me semblent un fait de beaucoup d'importance dans l'histoire de l'affection typhoïde."

Of the fatal cases of Typhus, Louis only had the opportunity of observing them in 6 of 9 cases examined with relation to them. Their duration varied from 3 to 10 days; and he never observed them before the 12th day. Of 21 of the severe cases, they were observed in 14; about the same proportion as in the fatal cases, viz. two thirds, varying in number. In 2 cases they covered the greater part of the surface of the body, and in their intervals the epidermis was torn off by the least friction, leaving the dermis exposed, moist, at first of a faint, then of a brighter rose colour.

They existed in 8 of 13 of the slighter cases, but were less numerous, and in none was the epidermis so easily rubbed off.

Of 40 cases of other acute diseases attended with copious sweat, they were observed only in 3, viz. in 1 of 6 cases of Enteritis, and in 2 of 5 cases of Scarlatina.

Erysipelas existed in 6 of the fatal cases of Typhus; sometimes transient, but severe in 4 cases. In 1, the inflammation passed from the nose to one of the knees, "les occupa successivement de 24 à 36 heures: et il n'y en avait pas de traces à l'ouverture du cadavre bien que la mort en eût suivi de très près le développement." Of the 57 who recovered, 3 were affected by it, but none of those who had Typhus slightly.

The skin was frequently ulcerated where blisters had been applied, and in a few cases entirely destroyed, in those who died, and who had the disease severely; but nothing remarkable was observed in those who had it slightly. Eschars on the sacrum were observed in one eighth of those who died, but only in 2 of those who recovered. They were not met with in other acute diseases.

With regard to the lesions of the *organs of respiration*: the epiglottis in 2 cases was enveloped by a false membrane, which had extended from the pharynx, and which also lined the larynx. In 7 cases it was thickened, red, and more or less destroyed throughout its substance, including not only the mucous membrane but the fibro-cartilage. This partial destruction coincided in 3 cases with ulcerations of the pharynx, 2 of which exhibited the

same lesion in the œsophagus, and the third in the stomach.

Like the ulcerations of the pharynx and œsophagus, the destruction of the epiglottis only occurred in those who died after the 15th day, and was less frequent in protracted cases. Louis considers it as one of the *secondary* anatomical characters of Typhus, and its detection in the examination of a body after an acute disease would be sufficient to prove, without further search, that the case was one of Typhus.

In a case of Peripneumonia, one of the edges of the fibro-cartilage of the epiglottis was exposed to the height of four lines, but without appreciable destruction, "et la membrane muqueuse correspondante decollée dans la largeur d'une ligne environ, un peu rouge et épaissie dans ce point surtout paraissait d'ailleurs intacte, et n'avoir subi qu'une simple division."

The glottis was more or less contracted and œdematous in 2 cases, and the œdema was observed in 2 cases of Peripneumonia.

The mucous membrane of the larynx was generally healthy; blackish and softened for a little space in 1 case, red and lined with a false membrane, as was the pharynx, in 3 others, one of which had to a marked degree the principal symptoms of Croup. In 1 case there was a superficial ulceration, about a line in diameter, between the arytaenoid cartilages. In a case of Peripneumonia, two ulcerations were observed at the base of the same cartilages.

The mucous membrane of the trachea was reddened in some cases, thickened for a small extent

below the larynx in 1, and partially lined by a false membrane in 2. As it, however, was not softened nor thickened, with the above exception, nor ulcerated, Louis considers the redness attributable either to congestion or to a very recent slight inflammatory action.

The lungs were more or less affected in the majority of cases. In about one third they were healthy, or merely changed partially in colour, being of a violet red in the posterior part, especially of the lower lobe. In 2 cases they preserved their arched form, but were crepitant, like emphysematous cellular tissue. In 19 cases "hépatisation ou carnification existait, compliqué avec un peu d'engouement ou d'hépatisation dans sept d'entre eux." It commonly existed in the lower lobe of one of the lungs, or in both in some cases; extended to the upper lobe, but never completely pervaded either, so that the anterior part was of a natural softness and colour. The carnified or *spleenified* portion was of a deep blueish red, without the natural suppleness of pulmonary tissue, and commonly sank in water. It was then entirely destitute of air, and, on cutting into it, the surface was covered with a layer of red thick fluid without bubbles of air. On wiping this fluid off, a similar layer could be produced by pressure; and after having thus emptied the diseased parenchyma, it presented neither the pulmonary structure, nor the grained aspect of the second state of its inflammation; was of a deep red, and more resistant than natural: the blood-vessels, however, were distinct, with open mouths. This lesion in many respects differed from that of acute pulmo-

nary inflammation, was not always coincident with a softened state of the heart, was uncombined, or complicated with the first or second stage of partial inflammation of the lung, and could not be referred to the position of the body, for it existed in a less proportion in protracted cases than others. It was observed alone, or combined with inflammation in

4 of 10 cases fatal from the 8th to the 15th day.

2 — 7 ————— 16th ——— 20th —

11 — 20 ————— 20th ——— 30th —

3 — 9 ————— after the 30th day.

Inflammation of the pulmonary structure in the first or second stage was observed in 17 cases, 7 of which were complicated with *spleenification*. It was almost always limited to a small portion of the lungs. The first stage (*engouement*) in no case occupied any considerable space, was commonly continuous, sometimes disseminated or lobular. The second stage (*hépatisation*) was very often observed at the summit of the lungs, and in 3 cases pervaded entirely one or the other lobe. One fact which strengthens the idea of the difference between the spleenification and hepatisation of the lungs is, that the last was in the inverse ratio of the former; for the first or second stage of inflammation was observed in

2 of the 10 cases fatal from the 8th to the 15th day.

2 ——— 7 ————— 16th ——— 20th —

7 ——— 20 ————— 20th ——— 30th —

6 ——— 9 ————— after the 30th day;

and in 3 of the last the hepatisation was most extensive, and in one of them small abscesses filled with pus were found in the hepatised portion. In

1 case a tumour, an inch in diameter, of a filamentous texture, containing a pulpy reddish matter, was found; and in some cases tubercles.

The mucous membrane of the bronchia was often of a bright red, and in many cases contained a small quantity of clear red-coloured mucus.

Adhesions of the pleuræ were observed in 19 cases, but in 2 only was there any trace of recent inflammation. One of these patients, who died on the 28th day, had a small portion of the lungs spleenified, or in the first state of inflammation, and the right pleura was coated in some points with shreds of a soft false membrane, without any other effusion. The other, who died on the 43rd day, had a considerable effusion, with membranous particles floating in it.

Effusions, always of a red colour, and in both pleuræ, with the exception of one case, in which there was on one side universal cellular adhesions, were observed in 19 cases. In 1 case only was there any red sediment. The quantity of the effusion varied from 3 to 30 ounces. In 4 cases it exceeded a pound in both pleuræ, 1 of which was fatal on the 8th day, 1 on the 21st, 22nd, and 43rd. In less quantity, it was more common in those who died from the 8th to the 20th day than later, in the proportion of about 4 to 3.

As to the cause of the effusion, Louis thinks, from the extreme infrequency of effusion in the pericardium and peritoneum, that it is to be attributed less to any change in the blood than to the obstacle presented to the pulmonary circulation by the spleenification or hepatisation of the lungs,

though these lesions were not always coincident with the effusion, and *vice versa*. The alteration of the blood was frequent, as the softening of the heart, which almost always coincides with it, existed in 15 of the 19 cases attended by effusion.

With regard to the *symptoms* connected with these lesions, 38 of the 46 who died of Typhus had cough, one sixth from the commencement, the others from the 3rd to the 12th day. It was generally slight and stationary, sometimes increasing or diminishing during the last days of life. Three patients had been affected with cough for some time before the invasion of Typhus, and it was not sensibly increased after the attack.

Expectoration was infrequent, sometimes sanguineous in those who had Epistaxis, and in 3 cases puriform, in one of which there was redness and slight thickening of the bronchia.

Auscultation detected, in all but 3 of those who were affected by cough, a dry sonorous or hissing, sometimes mucous, *rdle*, much more universal and noisy in general than in acute pulmonary Catarrh; and the disproportion existing between this *rdle* and the dyspnœa, renders the former somewhat characteristic in Typhus, so that its presence in a slight doubtful case, with no marked cerebral symptoms, might throw light on the diagnosis.

To this *rdle* was frequently united a degree of crepitation, two, three, or four days before death, limited to a small space. It rarely occurred earlier; or in two cases in which it appeared 8 or 10 days before death, it promptly disappeared, as was observed sometimes in the dry sonorous *rdle*. In

almost all the cases of crepitation, the lungs, after death, were found inflamed in the first or second stage in a corresponding point, so that the commencement of this crepitant *râle*, the only sign of the inflammation of the pulmonary structure, indicated the commencement of this inflammatory affection.

Louis considers the cough, though much more frequent in Typhus than in other acute diseases, as pursuing the course of all the other secondary affections, and attributable to a change in the bronchia, much slighter than that which exists in most of the other organs.

Out of the 57 who recovered from severe Typhus, 50 were affected by cough, generally slight and infrequent. It came on the 1st day in one fifth, and in the others from the 6th to the 15th day, sometimes before, rarely after. It sometimes increased in intensity, and generally from a limited inflammation of the lungs.

In 8, who had very slight cough, no *râle* whatever was heard; but in others the dry sonorous or mucous universal *râle* was audible. In 6 a crepitant or subcrepitant *râle* accompanied it, confined to the posterior part of the thorax, and lasting from 5 to 10 days, between the 12th and 30th days of the disease. This was the only symptom of the pulmonary inflammation, probably less from its small extent than from the debility of the patient at the time of its appearance. In one case, attended by extreme debility, the crepitation was extensive for a month, with an obscure sound on percussion; but there was not in this or the other cases anything characteristic in the expectoration.

In 3 cases there were pains in the side, transient in 2 of them, but lasting to a marked degree 8 days in the other, with signs from auscultation of effusion, the only example of it that occurred.

In the slight cases of Typhus the cough was rather less frequent. Of 22 cases inquired into, it existed slightly in 16; troublesome only in 4; the expectoration scanty, mucous or mucilaginous. Of 17 whose chests were examined, 12 rendered the dry sonorous or mucous *râle* to a considerable extent, and a slight crepitation was heard for some days in 2.

The *febrile symptoms* of Typhus, viz. shivering, heat, sweat, and the different states of the pulse, to which the secondary lesions, both in number and degree, are proportionate, require consideration.

Shivering occurred in 31 out of 33 of those who died; and in all but 6, from the commencement, at different periods of the day, sometimes during a meal, or in the night; often slight, but in one fourth strong, and accompanied by shaking. In 5 they occurred only once, but were repeated in the others during the cold as well as warm seasons. In 14 they were frequent for the first 8 or 10 days; and in 6, for 2 or 3 weeks, or more. They generally preserved in their returns the character they had at first, commonly occurring in the evening when the patient went to bed, or after a meal, in those who had not entirely lost their appetite, which shows that they often probably depended on errors of regimen, for they ceased after admission into the hospital, notwithstanding its low temperature in winter, and rarely recurred afterwards, unless at the

commencement of some secondary lesion. In the beginning they did not appear to have any connexion with these lesions, which were not more numerous in those cases in which the shivering was repeated than in those in which it was solitary.

Of those who recovered from severe Typhus all but 9 out of 45 were affected by shivering. In 6 there was only a great sensibility to cold; and the shivering occurred in 9 once only; was repeated several times from 8 to 15 days in the others, under the same circumstances as in those who died; ceased after admission into the hospital, and was strong or slight in about an equal proportion.

Of the 31 who had a mild Typhus, 24 had shivering, 4 only once, the others repeatedly. In 2 cases it came on regularly at noon; in 1 of them from the 1st to the 16th day, and in the other from the 8th to the 11th. With 4 exceptions, it came on the 1st day, and was considerable in 3 cases.

In every one of the fatal cases of Typhus, a high and often burning *heat* succeeded to the shivering. During the greater part of the progress of the affection, it was moderate in rather less than one third, without the quickness of the pulse being always proportionate, showing perhaps that the heat depended on a special affection of the skin, the more remarkable as it could not be attributed to inflammation. The heat was not uniform, but varied often in the same person.

In one fourth of the cases it was almost always a dry heat, but in the others was accompanied by more or less copious *sweats*, commonly after the evening accession, or in the night during sleep. In

some cases the heat was moderate, and the moisture almost continual.

In those who recovered from severe Typhus, the heat came on in the same way, was high in one half of the cases, commonly dry during the day and part of the night; whilst in the others, sweats were almost constant, not more influenced by the diarrhoea, nor exerting an influence over it more than in the fatal cases. The sweats could not be considered critical, as in one third of the cases they came on from the first, and in many were more copious for the space of 8 days than at any other period. So far from being always in proportion to the heat, they were often in an inverse ratio. In 6 cases they occurred in a marked degree during convalescence, for a period of from 10 to 15 days, commonly in the night, preventing the reestablishment of the strength, and not yielding to bitter or aromatic infusions. In 2 cases only did this occur during the summer.

In the slight cases the heat was rarely intense, and the sweats less; protracted during convalescence in 3 cases, only 1 of which occurred in summer. They lasted 18 days in one of the most obstinate cases of diarrhoea.

As these symptoms, shivering, heat, and sweat, so characteristic of periodical fever, are of great interest with respect to the affinity between it and Typhus, I shall detail the observations of Louis as to their occurrence in other acute diseases. It will be recollected, that he makes Typhus consist in an affection of the glands of Peyer; and future researches must show whether the Continued fever,

arising out of the Intermittent or Remittent, is ever characterized by this lesion, and whether in the Typhus of other countries, especially those where diarrhoea is a less prominent symptom than at Paris, this lesion is an invariable attendant upon the disease.

Out of 25 fatal cases of Peripneumonia, 19 were affected by shivering; 3 on the 2nd and 3rd days, and the others from the 1st. They were repeated in a few during the first days, and their appearance in an advanced stage of the disease was attributable to the commencement of some secondary lesion. They were absent in one third of those who died of other acute diseases. The heat was less dry, and rarely as high in Peripneumonia as in Typhus. Most had more or less copious sweats during the night, and through the greater part of the duration of the disease.

Of those who recovered from Peripneumonia, 45 out of 54 had shivering; 1 some hours after the development of heat, 4 after 3 or 4 days' uneasiness which indicated nothing formidable; the others from the commencement of the characteristic symptoms. They were repeated during 3 or 4 days in 11 cases, and ceased, as in Typhus, on admission into the hospital. All had, for 5 or 6 days, a more or less high degree of heat, proportionate generally to the acceleration of the pulse, but much less high than in most of the cases of Typhus; and, except in 3 cases, not protracted beyond 8 or 10 days. Copious sweats accompanied it in nearly all the cases in the first days. In some, after having been copious at the commencement, they did not reappear till the febrile excitement had lessened, 5 or

6 days afterwards or longer. They commonly occurred during the night, and were very copious in one fourth of the cases. But in no case was there "*sudamina*," nor were the sweats prolonged into the convalescence.

Rather more than one half of those who recovered from Variola had shiverings, commonly from the beginning, and they were repeated several times successively in a majority of cases.

Two thirds of those who had Scarlatina and Measles were affected by shiverings from the 1st to the 5th day, and most commonly several days successively; but they were generally slighter than in the preceding diseases. The heat and sweats were considerable in every case but two of Scarlatina, in the first days of the disease; rather less in Measles.

In Erysipelas, 24 out of 38 had shiverings, almost all the 1st day; 6 from the 2nd to the 5th day, and commonly several times. Those who did not have them, with one exception, were ill during the warmest months of the year, which shows the influence of temperature upon this symptom, at least in this disease, for it had no sensible effect in Typhus. There was no increase of heat beyond 24 hours in 7 cases of *Erysipelas of the face*; but it was considerable in the others from 4 to 8 days. The sweats, which were generally in proportion, were wanting, or only occurred once in 13 cases on the decline of the symptoms; were more or less copious in the others from the 1st day, rarely the 2nd; and were repeated 5 or 6 days consecutively, commonly in the morning. They lasted 18 days in 2 cases, in 1 of which there was a good deal of diarrhoea,

and in the other, the erysipelas overran successively almost the whole surface of the body, and the sweats only ceased when this was arrested in its progress. "Did the sweats in the convalescence of Typhus in some cases depend upon irritation remaining in an organ more or less deeply seated?"

In two thirds of those affected by Rheumatism, or *Angina gutturalis*, there were shiverings, almost always from the commencement; and in some cases they were repeated several times, from slight cold externally, or without any appreciable cause, and in 1 case of Rheumatism there was shaking. A regular quotidian shivering occurred in a woman affected by Rheumatism, a little before the convalescence, and only yielded to the sulphate of quinia. Those cases in which there was no shivering occurred equally in the cold and warm weather. The heat was more or less elevated in 47 out of 55 cases of Rheumatism, generally proportionate to the pain, increasing and diminishing with it. Sweats occurred in rather more than four fifths of them, and in 13, in which they were as copious as in some cases of Peripneumonia, they appeared on the 1st day.

Shiverings occurred in 64 out of 70 persons affected with pulmonary Catarrh; on the 1st day in 33; in the others from the 2nd to the 14th; and in three fourths several times: in 8, at regular intervals; but they disappeared generally the day after the patients entered the hospital. The heat was not sensibly increased in 19, and was moderate in the others. All but 10 had sweats more or less copious; and two thirds of them from the first.

Sixty out of 84 persons affected with *Enteritis*

had shiverings, almost all the 1st day: one sixth, from the 2nd to the 12th day. They were repeated several times in one half of the cases; and in 5, regularly, under a quotidian or tertian form, yielding in 3 to the use of bark alone. In 60 of the 84 cases of Enteritis, properly so called, the heat was but little above the natural standard; was either natural or only momentarily raised in the others, when some particular circumstance, as shivering, brought on reaction: and this absence of heat was more common in those cases in which the diarrhoea was great than the reverse; so that on the supposition of the inflammation of the mucous membrane of the intestines being proportionate to the number of stools, the effect in this case was the very opposite to that which inflammation commonly produces, for the heat must have been in an inverse ratio to the inflammation, which is an evident contradiction. Sweats were only absent in 6 cases, and about in the same proportion in those who had severe or slight diarrhoea. They came on the 1st day in one third of the cases, and at variable periods in the others, generally at night, lasting from 4 to 8 days, or longer, and often very copious. It was remarkable, that these copious sweats were the more frequent as the number of stools was greater, this coincidence existing in 17 out of 36 cases.

It is impossible, therefore, to believe that there is a balance of function between the mucous membrane and the skin in disease; and sweats can only be considered as the effect of a sympathetic action, like that which exists between other organs, when one of them is more or less diseased; and when we take

into consideration the slight febrile action in those who have much diarrhoea, the prompt subsidence of the symptoms, the shortness of the convalescence, we are led to believe that the mucous membrane of the intestine is generally very little changed in true Enteritis, and probably is in a state not much different from that of the skin in copious sweats. These were not only not in an inverse ratio to the diarrhoea, but commonly increased and diminished with it. They could not be considered critical in the majority of cases, as they generally began with the disease in which they appeared; nor were they always proportionate to the heat, which is greater in Typhus than in any other. Though the shiverings in the various diseases did not present as striking differences as the other symptoms, they were generally more considerable and more frequent in the severe than in the slight affections; and it was in the last only that they recurred regularly, whatever might be the nature and the seat of the malady.

From this long detail of Louis as to the febrile symptoms of Typhus, and other acute diseases, it is evident that shivering generally is one of the first, and that it is apt to recur, sometimes from the influence of cold, or from the supervention of a secondary local affection. But it recurs *regularly* more frequently, perhaps, in pulmonary Catarrh and Enteritis than in the other specified diseases, though the repetitions themselves in Typhus are more frequent, and for a longer period than in the others.

Out of 91 cases of Typhus, in which shiverings were observed, they were repeated in 69 of them. In 31 fatal cases, they recurred for the first 8 or 10

days in 14, and for two or three weeks or more, in 6; and 1 of these cases I have detailed previously, in which the symptoms bore so distinctly the character of a Quotidian Ague in a man who had come from the country to Paris, and whose case was considered and treated as such at first, though after death the diseased state of the glands of Peyer proved it to be Typhus. In 36 of the severe cases the shiverings were repeated in 27, and in 24 of the mild cases they were repeated in 22, in 2 of which they came on *regularly at noon*. Of 64 cases of pulmonary Catarrh, the shiverings were repeated in 48; regularly in 8 of them; but they ceased on entrance into the hospital, which was not the case in the quotidian form of Typhus above alluded to. Of 60 cases of Enteritis, the shiverings were repeated in one half, and in 5 of them under a regular quotidian or tertian form, so that 3 were successfully treated by bark only. In one case of Rheumatism the shivering assumed a quotidian form just before convalescence; and was equally cured only by quinia. This and the 5 cases of Enteritis, it might be contended, were Intermittent *fièvre*, complicated with the local affections; and Louis justifies this idea with respect to the latter, by making use of the term "*Entérite proprement dite*," as if he conceived that the cases with regular shiverings might admit the question of their being Ague.

The facts altogether by no means disprove, in my mind, the transition of Ague into Typhus, but, on the contrary, support the idea of this change occasionally taking place; but future observations must

determine whether the character Louis affixes to Typhus is actually applicable to it in other countries; and if so, whether the continued form of fever, arising out of the periodical, accords in its lesions with those of the primitive Continued fever, or Typhus properly so called. His observations are highly important, and it will be interesting to observe whether they accord with facts as laboriously and cautiously collected in other countries.

Before speaking of the state of the pulse I shall notice the morbid appearances in the *heart*, &c.

In the fatal cases of Typhus, the pericardium was almost always in a natural state: in 6 cases there was a slight effusion of serosity of a citrine colour, and in 1 of a sanguineous hue. There was not the slightest trace of recent inflammation, and in 1 case only was adhesion with the heart observed.

The heart was decidedly softened in 17 cases; in 2 of them, on the left side only: in the others it was extremely flabby, often without a determinate form, receiving and retaining any that was impressed upon it, like a wet cloth; its texture without cohesion, and easily torn; in many cases more or less discoloured, commonly of a livid violet hue throughout. The internal surface of the auricles and ventricles, on the contrary, was of a deep violet red, which sometimes penetrated beyond the lining membrane, and appeared to be the product of a sort of imbibition of blood, which it answered to in colour.

Louis offers satisfactory reasons for not considering this softening as the product of inflammation, especially as there was no trace of pus in the substance of the heart, nor of inflammation in the pericar-

dium. There was a degree of aridity in its tissue when cut into, and the substance of the ventricles, especially of the left, was thinner than natural. The softening was greater in frequency and degree in those who died earliest, so that its *maximum* was not met with in any case fatal after the 30th day. The rapidity of its development showed the intensity of the cause to which it was attributable, and, like the other lesions of the same nature, it must have accelerated the fatal termination. No similar affection was found in any other muscular organ, and all the voluntary muscles were of a natural consistence and colour.

The blood in the cavities of the heart varied with its condition. In those cases in which it was of a natural consistence, fibrinous concretions, more or less consistent, of a whitish or yellowish colour, were found almost invariably, especially on the right side, and sometimes only on this side. In 1, where there was slight softening, a concretion less firm than the preceding was met with; and where the softening was more decided, clots of non-fibrinous blood were found in the ventricles and auricles; and in its highest degree nothing but drops of blood mixed with bubbles of air.

In 14 cases of persons who died of other acute diseases, the heart was softened, and in several precisely as in Typhus. It was not equally frequent in all the diseases, existing in rather more than one eighth of the cases of Peripneumonia; in 2 of 5 cases of sudden death; in 2 of 8 cases of softening of the brain; in 1 of 2 cases of Scarlatina; twice in 2 cases of Variola, and in 2 of phlegmonous Erysipelas

of the lower extremities, the only ones which proved fatal. Supposing these last proportions were the effect of chance, still it is evident that softening of the heart is very frequent in acute cutaneous diseases, and more so than in any other acute disease, not excepting Typhus. Age seemed to have no influence over it: it was not met with in any case fatal after the 30th day, but occurred in one person who died of Scarlatina on the 6th, in whom, as in several other cases of rapid death, the softening of the heart was extreme, and the liver and kidneys had lost much of their usual consistence.

The state of the *blood* was generally in relation to that of the heart; but in 3 cases of Peripneumonia, in which that organ was much softened, fibrinous concretions were found in the right cavities. If this difference between Peripneumonia and Typhus is to be explained by that which the blood (drawn during life) presents in these two diseases, it would seem to show that there is not any necessary connexion between the condition of the heart and that of the blood; and yet in the case of a woman who died of acute softening of the brain, the heart was not only extremely soft and almost empty of blood; but was distended by gas in the left ventricle, and the pericardium by the same gas and a sanguineous serosity, and the blood during life appeared quite dissolved; so that in the case in which the softening of the heart was the greatest, the blood also appeared most changed both during life and after death.

The aorta was natural in 23 out of 42 fatal cases of Typhus, in the others of a more or less bright

red; either in spots, which were commonly of a pale red, extending throughout the whole length of the vessel; or continuous, and then the redness was almost always intense, and generally extended some distance into the principal arteries. In no case was it confined to the internal coat, but penetrated more or less to the middle one. The former was of a natural consistence and tenuity in 2 persons who died from the 8th to the 14th day, but was a little softened in a third. Whether the aorta was of a white or red colour, it contained a certain quantity of clotted or fluid blood. The redness, excepting 5 cases in which it occurred, coincided with softening of the heart. In 4 of these exceptions the redness was not considerable, while it was generally intense when the heart was softened and in proportion to its softness. It was not, therefore, equally frequent in those who died at different periods. It was found in

6	of the 10	who died from the 8th to the 15th,
3	—— 6	—— 16th —— 20th,
8	—— 20	—— 20th —— 30th,
1	—— 7	—— after the 30th.

It was very slight in the last case, appearing in spots of a pale rose colour, so that this redness of the aorta, whatever might be its nature, was like the other accessory lesions, more frequent and more marked in those who died at an earlier than a later period, which would seem to show that it is something more than mere imbibition. The same discolouration was observed in other acute diseases, and Louis, after stating his objections to the idea of its being the result of inflammation or of *simple*

imbibition, infers that it is one of a *special* kind, depending on some change in the blood and in the tissue of the artery, or in both in some cases. The red, and successively decreasing colour of the middle coat of the artery proves that it depends on imbibition. But this requires some particular states either of the blood or of the vessel, since the last remains white in one half of the cases, though it contains more or less liquid blood. If the internal membrane of the aorta is in a natural state, the cause of the redness may be presumed to be some change in the blood, which makes it impart to the membrane its colouring matter; but if the membrane is more or less softened, with or without thickening, it is probable that it is the cause of the phenomenon, either exclusive of or attended by a certain change in the blood; a change which admits of no doubt in most of the cases of this kind, and which only occurs in a few persons when the artery is perfectly healthy.

Analogy confirms this view of the subject, for the bile does not always tinge the tissues, with which it is in contact, of a yellow colour; for in the stomach we sometimes find only one yellow spot, and this is inexplicable without the admission of the discolouration requiring some change in the tissue in contact with the bile or in the bile itself. Whether the imbibition in the case of the aorta takes place before or after death, it is impossible to decide.

The *pulse* in 20 out of 41 who died of Typhus was small (*étroit*,) rather large and full in 13, and more decidedly so in 8. As to frequency, it was from 80 to 90 in 8 cases from 8 to 15 days before

death, and was not affected by strong tonic draughts. In some it was generally over 100 for the last 10 days or longer. In one, who died on the 20th day, it was upwards of 120 for 11 days previously; and in another it fell from 150 to 116 during the last 6 days, and was feeble and regular. This regularity was observed in most of the cases, and in 7 only was the pulse intermittent or irregular. The heart was softened, and generally to a great degree, in 13 of the 41 whose pulse was duly investigated; and of 17 in whom the pulse was unequal, irregular, intermittent, small, feeble, tremulous, sunk, for a longer or shorter period, 11 had softness of the heart; that is, that in almost all the cases in which this softness existed, the pulse had one or more of the above characteristics, and that the heart was not natural but in one third of the cases in which these states of the pulse existed; so that of 3 cases in which the pulse is unequal, irregular, intermittent or tremulous, and very quick, it may be inferred that in 2 of them the heart is softened or flabby; and the commencement of this lesion would be indicated by the pulse changing to one of the above states. On this principle the softening of the heart in the above cases would have occurred 4, 7, 10 and 20 days before death, periods not less variable than those of the other secondary lesions, particularly those of the skin.

In those who recovered of severe Typhus, the quickness of the pulse was in the inverse ratio of its size, so that in no case in which it had the greatest breadth did it exceed 92. It was generally less quick than in those who died, not exceeding 90

in 20 cases, and below 80 in 1 ; and in all these cases the progress of the disease was rapid. In the others it was above 90 for a considerable time, and in 3 above 100, in one of which the prostration was extreme, and the disease very protracted, the pulse ranging from the 12th to the 20th day, from 120 to 140.

From a comparison of these facts with the preceding, it would seem that a moderately quick pulse is a favourable prognostic, and would indicate a rapid progress to the disease, while an opposite state would lead to the apprehension either of a protracted case, or of its issue.

The pulse was unequal or intermittent in 6 cases ; small, contracted, tremulous and very quick in 4 ; and the heart was probably more or less softened in 6 or 7 of these cases ; not more common in those of a slow than in those of a rapid progress, and commencing from the 8th to the 10th day of the disease.

The symptoms of this softening of the heart derived from the state of the pulse merit so much the more confidence, as they show that this lesion is much more frequent in those who die than in those who recover, as is the case with all the other secondary lesions.

The pulse was very often large in most of the other fatal acute diseases, and its quickness generally much less than in those who died of Typhus. It was unequal, intermittent, and very small in 6 cases of Peripneumonia, in 4 of whom the heart was softened. It was the same in 4 who died of other affections, in 3 of which the heart was simi-

larly affected in different degrees; so that these facts are in perfect harmony with those derived from the fatal cases of Typhus, and confirm what has been advanced of the diagnostic signs of the softening of the heart, which signs give a new interest to the study of the different states of the pulse.

As to those who recovered from other acute diseases, in three fourths of the cases of Peripneumonia the pulse was large and less than 80, above it in the others, in some as high as 100 for several days, but promptly lost the greater part of its quickness as soon as the local symptoms became stationary or appeared to amend, and, as in Typhus, the duration of the disease was in the inverse ratio of the quickness of the pulse. It was unequal and intermittent in 1 of 57 cases; small, contracted and very frequent in 2 others: so that the heart was softened in 2 of these 3 cases; a proportion much less than in those who died.

Smallness and inequality of pulse were not observed in any case of eruptive disease, and its quickness was less than in Peripneumonia; not above 86 in more than one fourth of the cases of Variola and Scarlatina, and in one sixth of those of Measles, for a very few days.

The *maximum* of its quickness was the same in erysipelas of the face, and except when the erysipelas overran the greater part of the surface of the body, or became complicated, the pulse regained its usual calmness. It was momentarily somewhat irregular in 2 cases, but as it was not at the same time small or very quick, it could not be inferred that in one there was softening of the heart.

Of 57 cases of Rheumatism, 3 only had a pulse of 90 for 3 or 4 days, and in 1 only was it transiently unequal; of 72 cases of pulmonary Catarrh, 3 only had a pulse of 90 for a few days. It was more or less irregular in 3 cases, but in 2 of them it was not sensibly accelerated, so that there could be no suspicion of softening of the heart, which is in accordance with the rarity of secondary affections in this disease. The pulse was calm in three fourths of the cases of Enteritis, from 65 to 40 in the minute, and this slowness was more common in those who had many than in those who had few stools, and Louis infers that in the great majority of cases there was but a very slight degree of inflammation, which in all probability would not have left any traces after death.

The disturbance, therefore, of the circulation and the change in the heat were proportionate to the number and gravity of the secondary lesions, more considerable in Typhus than in Peripneumonia, and in this than in any other disease; and as the connexion of the circulation with the different organs is evident, it is natural to suppose that its disturbance in acute diseases is one of the chief agents in the production of the secondary lesions. It might be contended that these were the cause and not the effect of the excitement; but as they are consecutive to it, and as the febrile action is not always increased on their appearance, it cannot depend on them. If it should be said, that at the commencement of acute diseases all the functions are more or less changed, and that this change cannot be attributed to a febrile action, it may be

urged in reply that this last assertion is not demonstrated, and if it were, it would prove nothing, as we are speaking of appreciable lesions, and not of simple disturbance of function, which may exist for a considerable time without the organs presenting any sensible change. It must not be forgotten, also, that febrile excitement, like all other causes, only acts on parts which are in a state of predisposition: and though the secondary lesions were generally more serious in those who died early than in those who died late, and consequently that the febrile action appeared to have the less influence as it was the more protracted, which seems a contradiction, yet it should be recollected that the fundamental lesion of the glands of Peyer was more extensive in the early than in the late fatal cases, and that the febrile action was generally proportionate to this extent of lesion; so that the contradiction is only in appearance, and not in reality.

Having given this very detailed abstract of the important facts and observations of Louis on Typhus, I shall quote those on *Intermittent fever*, to show that we have at least in it a great analogy as to general disturbance of function, and that there is ample room for the conjecture of similar lesions occurring in it, in those cases where the periodical form of fever changes, through the intervention of inflammation, into the continued; independent of the fact of such lesions having in one instance at least presented themselves to Louis's notice, as in the case before quoted.

Dr. Armstrong considered Ague as a fever of

simple excitement, proceeding from a specific cause, and if this excitement passed into inflammation, he contended that either a Remittent or a Continued fever was the result, and that the last was the same as Typhus when this began and ended as Continued fever. Louis's observations appear to me to confirm this view, for he says that the only thing in common between Intermittent fever and the other acute diseases is the febrile action. Dr. Armstrong has implied the same thing, for he makes Ague a disease of excitement, and Typhus one of excitement and inflammation, and therefore if the last effect be added to the febrile action of Louis, his Ague would change to Typhus, as was the fact in the case just referred to. It cannot admit of a question that Typhus occurs in high latitudes from the same apparent causes, and often in the same localities as Ague does in lower latitudes, nor can it be denied that a distinctly periodical fever passes occasionally into a continued form. If future investigations should show that the lesion of the glands of Peyer are invariable in Typhus, and that this lesion exists in these Continued fevers so arising out of the Periodical, there will be an end of all doubt upon the subject. It is rather remarkable that Louis apparently met with no fatal case of Ague. It might be contended that this is in proof of the truth of Dr. Armstrong's position of malaria giving rise to an intermittent and continued form of fever; and that the former is the effect in persons free from any marked predispositions, and the latter the effect in those who have them. Louis met with no fatal cases of Ague, because the cause

acting on sound subjects produced the minimum effect, in a climate admitting of both types; the maximum effect being exhibited under that of Continued fever, either arising as such or out of the periodical form, and in both cases the disease was Typhus, because the essential lesion was found in them. If this view be considered too conjectural after the rigid inductions of Louis from precise facts, I would say that in the present state of our knowledge we can only resort to conjecture, and must consider the results to which we are led merely as conjectural. But if we refuse its aid, how are we to explain the frequent fatality of Ague with the infrequent occurrence of Typhus in Italy; the infrequent fatality of Ague with the frequent occurrence and formidable mortality of Typhus in Paris; and the total absence of indigenous Ague in Scotland with Typhus existing there, in situations which are productive of Ague and its associated periodical types in warmer climates?

Before leaving the subject of Typhus, I would remark that in Paris the symptoms of ungovernable delirium and of rigid spasmodic contraction of the muscles are more frequent there than in Great Britain, partaking therefore in these respects more of the violent character of the pernicious fevers of Italy than of the low fever of this country, from which also the Parisian disease is widely separated in the ratio of its mortality. Louis's observations as to the tendency of Typhus to affect the glandular system are important with reference to its affinity to Plague. He found the glands of the abdomen,

the groin, the neck and the axilla affected; that they were much less frequently diseased in other acute affections; and he infers that Typhus exhibits a *marked predisposition* to affect this system. Taking into consideration the somnolency, the delirium, the profound debility, petechiæ, &c., which belong equally to Plague and Typhus, we may conceive the causes of the last rising occasionally to the effect of the first disease, without requiring a specific contagion to account for the more diffused and frequent affection of the glandular system in Plague.

After having compared the symptoms of Typhus with the analogous ones of other acute diseases, Louis remarks, that it will be useful to throw a *coup d'œil* view over the facts of a similar kind observed in Intermittent fever; for in meeting with the same symptoms in cases which have nothing else in common with the preceding but the febrile action, the influence of this over the development of secondary symptoms and lesions will be more evident.

Of 40 persons affected by Quotidian fever, 18 had pains in the abdomen, 9 in the left hypochondrium, and 9 at the umbilicus. These last were transient in every case, came on at a period more or less remote from the commencement; coincided in 2 cases with liquid stools, and in the others with slight constipation. The pains in the left hypochondrium came on from the first, only existed in the access, especially during the shivering, in 6 cases, in 3 of which at the time there was a sense of tumefaction in the part. The spleen was

very large in these 3 cases, and probably the seat of the pain. It was evidently enlarged in 5 cases, in which there was no pain; and though in, those cases in which it apparently was of the usual size, it is not easy to determine precisely the seat of the pain, it may be observed that the spleen was, of all the organs, the most frequently and evidently affected; that in several cases, in which no increase of size could be detected through the parietes of the abdomen, there was no resonance of the chest over it, though the respiration appeared natural, and consequently that this increase did exist nevertheless; that in all cases in which there was pain it is probable the spleen was affected, and the seat of that pain; and that the intestine was the seat of transient pains only in 9 cases.

Of 16 out of 36 persons affected with Tertian fever, 12 had pains in the left hypochondrium and 4 in other parts of the abdomen. The pain in the hypochondrium came on the first day, and in 8 was only sensibly felt at the access, but occurred also in the intervals in the others. The size of the spleen was evidently increased in 12 of 28 cases, in which the sulphate of quinia was administered, among which were 5 of those with pains in the left hypochondrium; and if we apply the foregoing reflections to those cases in which pain existed, but in which the increase in the size of the spleen was not perceptible through the integuments of the abdomen, we should conclude that probably the pains in the left hypochondrium were seated in nearly all the cases in the spleen, the size of which was increased in more than the specified number of cases.

Of 8 persons affected with Quartan fever, 1 had pains of the abdomen, though the size of the spleen was considerable in 4.

Of 25 cases in which the fever took successively different types, sometimes separated by intervals without fever, there were pains of the abdomen in 7; in the left hypochondrium in 4; and in other parts in 3 of them. The hypochondriac pains were confined to the time of access; the others were variable, and accompanied by liquid stools for some time. The size of the spleen was evidently increased in 12, of which 1 was of those who had pain in the left hypochondrium; and percussion of the chest yielded a flat sound in some cases where the spleen was not felt through the integuments of the abdomen.

So that of 41 persons who had pains in the abdomen, 25 had them exclusively in the left hypochondrium; the others in different parts, commonly at the umbilicus, and always of short duration, for 1 or 2, rarely 3 days, with no evident relation to the hours of the access of the fever, and coming on at a variable period of the disorder; while in the three fifths with pains in the left hypochondrium, these pains were limited to the access, and came on with the first one.

It would therefore seem that these pains are essential and the others accessory, like those in the continued type. If the cases in which there were pains in the left hypochondrium from the first be added to those in which the size of the spleen was evidently enlarged, there will be 52, (in several of which the pain and tumefaction of the left hypo-

chondrium existed at the same time,) in which this part of the abdomen (and probably always the spleen) was affected; and as those cases in which percussion indicated an increase of its size are excluded, it is probable, as this increase could not be recognised except it was considerable, that it really existed in many cases in which it could not be detected. If it be said that we cannot consider these fevers to depend upon a change in the spleen, because this organ preserves its size in the intervals, and because the fever may be suppressed without that size sensibly diminishing, nevertheless the condition of this viscus merits particular attention in Intermittent fevers, since it is evidently affected at their commencement, and more frequently than other organs.

Diarrhœa occurred in one sixth of those affected by Quotidian fever, in one fifth of those by Tertian, in only 1 case of Quartan, and in one fifth of those in whom the type varied; so that, abstracting those cases in which it was occasioned by some excess, it was present in 9 out of 109 cases of Intermittent, or in one twelfth always slight and of short duration, so that if the seat of this form of fever is to be considered either in the spleen or intestines, we cannot suppose it is in the latter.

Pains at the epigastrium occurred in 6 out of 40 cases of Quotidian, in 7 of 36 cases of Tertian, in 1 case of Quartan, and in 4 of 20 cases of the variable type, that is, in 18 out of 109 cases; but if we except those cases in which the pains were relieved by food, others in which they were transient or only sensible on pressure, the number in which

the pains could be referred to gastric irritation or inflammation would be much lessened; and admitting that it existed in some cases, it must have been slight, as in no one were pains and vomiting coincident.

Nausea occurred in 10 cases of Quotidian fever, and in 3 spontaneously, in one of which it was limited to the access. In 2 cases there were vomitings, in 1 bilious, and occurring at the hour of the access for 20 days consecutively; and though there were no pains at the epigastrium at any time, it is probable that an irritation of the mucous membrane of the stomach, perhaps of the liver, existed at the commencement of the paroxysm. Twelve, or one third of those affected by Tertian fever, had nausea, 9 during the cold or hot stage, 3 in the interval; and vomiting occurred in 3 cases, always in the cold or hot stage. One affected by Quartan fever had nausea during the paroxysm and interval for 20 days successively, and he vomited when he drank freely, or took indigestible food, or medicines in the form of powders. Nausea existed in 4, and vomiting in 3 cases of the variable type of fever.

The tongue was rather redder than natural in 6 cases of Quotidian for 2 or 3 days, and in the apyrexia; dry only during the paroxysm in another, who had vomiting. This dryness without redness existed for 2 or 3 days in 3 cases of Tertian, in 1 of which there was diarrhoea. The tongue was red and moist in another, who had neither vomiting nor diarrhoea, and it was in the same state in 2 cases of Quartan, and somewhat dry in 3 cases of the variable type, without diarrhoea existing in any of

them; so that if the redness of the tongue was attributable to a slight degree of inflammation, the cases in which it occurred were not numerous, and it was proportionate to the other symptoms.

In 4 cases of Quotidian there were redness and pain at the back part of the mouth, and in 1 the velum and tonsils were swollen, as was the case in 2 examples of Tertian fever, and in 2 others redness and pain in the velum and pharynx. In 2 of the variable type the uvula and pharynx were red.

"Ces faits, dont la nature ne peut être mise en doute, me semblent précieux, en ce qu'ils montrent plus clairement qu'aucun autre, la part que prennent aux affections fébriles, même intermittentes, les divers organes de l'économie."

Headache occurred in every case but 3 of Quotidian fever; continuous in 6, confined to the paroxysm in the others; greater during the hot stage in 12, during the cold in 6, and about equal in both in the remainder. It was accompanied with violent agitation in several cases, and with delirium in 5, which in one came on every other day, and in another at every paroxysm for 8 days.

All who had Tertian fever, excepting 2, had headache, 5 uninterruptedly, the others only during the paroxysm; in 6 it was greater during the cold stage, but the reverse in the others. Three were affected by vertigo, 1 by drowsiness, another by agitation during the night, and 3 by slight delirium, in one of which it came on once, and in the others was repeated in four consecutive paroxysms. Seven out of 8 persons affected by Quartan fever had headache, 1 after the paroxysm, the others principally in the

hot stage: none had delirium. All, but 4, who had fever of a variable type, had headache, 5 continuously, the others in the paroxysm; in one it was greater in the sweating stage, in 2 in the hot stage, in 3 in the cold, and about the same in the 3 stages in the remainder. Delirium during several paroxysms occurred in 1 case.

Copious and repeated epistaxis occurred in 7 cases of Quotidian, in 2 of Tertian, and was more copious in 2 of Quartan fever. Noise and whizzing of the ear occurred in 4 cases of Quotidian, and in 1 some difficulty of hearing; and noise alone in 1 case of Tertian, and 1 of the variable type. In 1 case of Quotidian there was an eruption of urticaria at the ninth paroxysm; and in 3 of purulent pimples about the lips on the 4th or 5th day. The same eruption occurred in 4 cases of Tertian from the 5th to the 9th day, and in another case red pimples broke out after several paroxysms over nearly the whole surface of the body. The same appeared in 1 case of Quartan; and an eruption of red spots in 1 case of the variable type. Pains in the limbs and loins, sometimes constant, but generally only during the paroxysm, occurred in 30 out of 40 cases of Quotidian. They were absent in 13 cases of Tertian; constant in 3; confined to the paroxysm, and, with two exceptions, greater during the hot than the cold stage, in the others. They occurred in 4 cases of Quartan, either in the hot or cold stage, and in 4 of the variable type; a 5th case was attended by spasmodic motions of the extremities during the paroxysm, from the 170th to the 190th day of the affection; and in 1 case, in

which the spleen was very large, there was oedema in the lower extremities.

Cough occurred at remote intervals in 18 cases of Quotidian fever, during the paroxysm in 4, once in the cold and thrice in the hot stage; in 13 cases of Tertian, seven times in the cold and once in the hot stage, from the 4th or 5th paroxysm; and also in 13 cases of the variable type, four times during the paroxysm, in the cold or hot stage exclusively.

The changes, therefore, observed in the organs or functions in Continued fevers, are found also in those of an Intermittent type, and the only difference is in degree. Many of those affected with Intermittent fever had pains in several parts of the abdomen, diarrhoea, vomiting, nausea, redness and dryness of the tongue; redness, pain, and in some cases swelling in different parts of the back of the mouth; several sorts of eruption on the surface of the body and round the lips, anxiety, delirium; so that, whatever may be the cause of the febrile action, whether this be continued or intermittent, it is always accompanied by the disturbance of the same functions, and by a change in the same organs: and this connexion or dependence is so much the more evident here, as the change in the functions was frequently limited to the paroxysm.

It cannot be pretended that the viscera whose functions were disturbed were the cause or the seat of the fever, and that the febrile action was at one time the effect of a lesion of the stomach, at another of the bronchia, or of the organs situated at the back of the mouth, as in most of the cases in which these occurred, they happened at the 3rd

or 4th paroxysm. It is to be remarked also that in the same person there were often several symptoms indicative of the disturbance of several functions ; that the spleen had been affected evidently from the first in several cases in which the inflammation of the back part of the mouth was consecutive, which is a reason for not placing the seat of the affection in this or that part, and for considering the symptoms that have been successively described as accessory or consecutive.

These views of Intermittent fever, considered, as Louis regards it, as a disease *sui generis*, certainly do not invalidate those of Dr. Armstrong, who looked upon it as a specific fever of simple excitement, apt to change its type on the supervention of inflammation, and thus to pass into Typhus. Louis has shown that the symptoms which attend it arise out of the excitement, with the exception perhaps of those connected with the spleen, which he seems inclined to believe is affected from the first. In what this affection consists, we have no means from his observations of judging, as it does not appear that he met with any fatal cases of Intermittents. It will be recollected that enlargement and softening of the spleen is one of his secondary peculiar characteristics of Typhus ; and it surely will be admitted to be possible, from his report of the disturbance of the organs and functions in Intermittents, which he allows vary only in degree from those of Continued fevers, that an Ague changing its type to Continued fever, which the occurrence of inflammation or of some internal lesion, from the influence of a high degree of

excitement, would effect, we might have developed the lesion of the glands of Peyer, and thus the conversion of Ague into Typhus confirmed by an appeal to morbid anatomy. The case I have before alluded to may be considered as a probable change of this kind, and others of a more decided character may be met with hereafter.

It is a very remarkable circumstance that Louis should have met with Intermittents uniformly of so mild a kind, not only never fatal, but never presenting to his observation any of those formidable symptoms which Torti and Lancisi have associated with it. This looks as if the disease had been the minimum effect of the cause which exhibited its maximum effect in Typhus; or why, out of the many cases which must have been seen by Louis, are there none so formidable in character as those described in Italy, where Continued Typhus is a rare disease? While Ague was so mild in Paris, Typhus, on the contrary, was attended with a frightful mortality, for Louis admits that one third of those who laboured under it died; a fatality far greater than any known in this country even in hospital practice. At all events, as the disturbance of the functions in Ague differs but in degree from that of Continued fever, it is reasonable to infer that the higher degree of these disturbances may be met with hereafter in Ague; and if, coincident with it, there should be a change of type with the lesion of the glands of Peyer found after death, the fact, not only of Ague passing into Typhus will be established, but light will be thrown upon the cause of the latter disease, and the in-

fluence of mean temperature on the type of fever be rendered more probable.

I shall now offer Louis's views on the diagnosis and causes of Typhus.

The pains in the abdomen, and the diarrhoea especially, which occurred in every case but 3, are of importance with relation to fixing the commencement of the disease, but of less value as to diagnosis, as they exist to almost an equal degree in Enteritis, and are met with, though less frequently and at a more advanced period, in other febrile affections; and the gastric symptoms, the pains at the epigastrium, the nausea and vomiting are of still less value, as they occur in nearly the same manner, and often in a more remarkable degree in other diseases. The same might almost be said of the heat and the quickness of the pulse, (though these are more decided in Typhus than in any other affection,) and of the headache, the pains in the limbs, and even to a certain extent of the delirium. But the other symptoms are more or less characteristic.

Among these are epistaxis, so often observed in Typhus; petechiæ, which are more important as they occur in almost every case, and are very rare in other diseases; the *sudamina*, when large and numerous; the meteorismus, the black-coated tongue, drowsiness, stupor, extreme debility disproportionate to the other symptoms, the eschars on the sacrum, the ulcerations and the subsequent destruction of the skin on blistered surfaces; the spasms or the permanent contraction of the muscles of different parts; symptoms which are not at all, or but rarely observed in other diseases, and then in

a moderate degree. When they are found in a greater or less number in the same subject, there can be no doubt of his having Typhus, and of the glands of Peyer being the seat of it; for though each of the symptoms is sometimes met with in the course of other diseases, it is not the case with their union in a certain number. There can be no difficulty, therefore, in those cases where these symptoms exist; but the most important ones are sometimes wanting, and the greater part of them only occur at a certain period of the affection, and therefore to recognise it in every case near its commencement, we must carefully examine the order and succession of the symptoms, which, taken singly, are insufficient for the diagnosis.

If the disease occurs in a young subject, and commences as is usual without any appreciable cause, by a more or less violent shivering, pains in the abdomen, diarrhoea, anorexia, thirst; if the weakness rapidly increases above that which exists in Enteritis, the patient faltering in his gait, with a higher degree of fever than is usual in the latter affection, there is more reason to suspect the existence of Typhus than any other disease. Other symptoms soon occur which remove every doubt; for petechiæ appear from the 7th to the 12th day on the abdomen and chest, with ringing at the ears, vertigo, some degree of drowsiness, and cough, a dry sonorous *râle* over the whole chest, and slight meteorismus, which render the character of the disease evident enough, without waiting for the stupor, delirium, and spasms to characterize it, especially as these do not exist in all cases.

These cases, in which the disease follows its usual course, present no great difficulty; but it is otherwise when there is no diarrhoea nor pains of the abdomen for several successive days, or when these are rare; but even then the difficulty is only apparent; for if the diarrhoea does not exist, this excludes all idea of Enteritis, and if the febrile excitement is decided, without signs of the lesion of any particular organ, the appetite prostrate, and the patient young, &c., as these symptoms agree with no other affection than Typhus, its existence is to be suspected. But in this, as in the former case, the diagnosis becomes more certain as the disease advances, for the characteristic symptoms become developed, and if all do not appear, there are always some which admit of no doubt. Where meteorismus is absent, there are somnolency, delirium, extreme prostration, and *sudamina*, an assemblage which occurs in no other disease.

It may be recognised even where the characteristic symptoms are few or transient, for if a *young* subject have a slight diarrhoea accompanied by rather more febrile excitement than is usual in Enteritis, and this diarrhoea should not yield to diet and demulcents, and the feculent matter should be mixed at a certain period of the affection with a moderate quantity of liquid or clotted blood, and he should have had occasionally a slight degree of meteorismus, ringing of the ears, a little deafness, with considerable debility, it might be declared Typhus, even though neither *sudamina*, nor petechiæ, nor delirium have existed.

Typhus, therefore, may be characterized as an

acute disease, the cause of which is unknown, peculiar to young persons, especially those who have within a short period been placed under unusual circumstances, and accompanied by a febrile action, more or less intense and variable in its duration; commencing by violent shivering, anorexia, thirst, and generally by colic and diarrhœa, soon accompanied by a debility disproportionate to the other symptoms, sooner or later by somnolency, stupor, delirium, meteorismus, *sudamina*, petechiæ, eschare on the sacrum, ulcerations of the skin on blistered surfaces, deafness, variable spasmodic motions, or permanent contraction of the limbs; symptoms, some of which disappear after a certain time, while others for the most part progressively increase in fatal cases, or which, sooner or later, diminish and at last subside entirely in those who recover; the anatomical character of the disease consisting in a special change in the glands of Peyer in the ileum.

Louis confesses himself unable to assign any cause for Typhus. In the examination of those circumstances which appear to favour its development, he considers the influence of age, a change of habits, and sex.

The mean age of those who died was 22, and of those who recovered 21.

Of the first,

14 were from 17 to 20 years old.

20 ————— 20 -- 25 —————

11 ————— 25 -- 30 —————

5 ————— 30 -- 39 —————

—
50

and of the second,

31 were from 15½ to 20 years old.

39 ————— 20 — 25 —————

13 ————— 25 — 30 —————

5 ————— 30 — 39 —————

88

The slight difference observed in the mean age of those who die and those who recover is not attributable to chance, as, under 25, the number of those who recover is much greater than those who die, while above it, the number of the two classes is about the same; so that if youth be a condition essential to the development of Typhus, the disease is less fatal as the age is the younger. None under 17 died.

With a few exceptions, the patients had been in Paris but a short time; those who recovered, about 14 months; and those who died, about 11, on the average; and hence, if Paris and its mode of life be favourable to the production of Typhus, the disease is less dangerous as the residence in the city is the less recent, which is conformable to the ordinary effects of *acclimatation*.

Those who died had been in Paris,	Those who recovered had been in Paris,
10 from 2 to 3 weeks.	7 from 2 weeks to 3 months.
8 — 3 — 5 months.	19 — 3 months — 5 —
10 — 6 — 10 —	19 — 6 — — 10 —
9 — 11 — 20 —	20 — 11 — — 20 —
5 — 20 — 30 —	12 — 20 — — 30 —
2 — 48 — 96 —	1 — 30 — — 40 —
44	7 — 48 — — 96 —
	85

So that of 73 affected with Typhus, and resident in Paris from 2 weeks to 10 months, 28, or more than one third, died; while of 56 who had been there

a longer time, 16, or less than one third, died. Three of those who recovered and 1 of those who died had been in the city from infancy.

Louis does not consider that his Tables express the exact truth, though it is unquestionable that Typhus is much more frequent at Paris among the new than the old residents.

He does not believe that sex has any influence over the production of Typhus; for though out of 138 persons, only 32 were females, yet the number of men who resort to Paris is probably much greater than of women; and the mortality was the same in both sexes, which hardly could have been if a predisposition to the disease had been more marked in one than the other. Nor could he infer that any particular occupations, requiring more or less exertions, had any material influence over it.

Those who laboured under the disease were generally of a strong constitution; but as the mortality was proportionately the same in the strong and the feeble, it cannot be asserted that Typhus is more frequent in the one than the other.

The facts which he collected forbid also his ranking excessive labour, misery, and distress among the causes of Typhus, as one seventh only of those who died, or recovered, were under these circumstances; nor could a residence in low, crowded situations be ascribed as a cause, as one eighteenth only were so lodged.

The most profound obscurity, therefore, he conceives, hangs over the causes of Typhus; but whatever they may be, they undoubtedly contribute to the mortality and to the development of the second

dary lesions, as may be said of many severe diseases which arise from no appreciable cause, or from such slight exciting ones as only prove the existence of predisposing causes. Too great an influence, however, over the mortality and the febrile action must not at all times be attributed to these predisposing causes, as has been done by some who have insisted on those cases in which the lesion of the small intestine has been slight and disproportionate to the violence of the symptoms. It has been shown that the number of the diseased glands of Peyer is generally from 12 to 40 in two thirds of the cases, and that each on an average occupies a superficies of about an inch and a half, so that the whole cover a surface greater in most cases than that of the inflammation of the skin in erysipelas of the face. These glands, even when slightly diseased, are accompanied with an analogous change in the corresponding mesenteric glands, while the intermediate mucous membrane in most cases soon becomes affected, and as the diseased structure is constantly in contact with substances which become irritant to it, the febrile action in Typhus can scarcely be considered less in proportion to the condition of the small intestine, than that of erysipelas of the face is to the extent of the inflammation of the skin; and if everything is not appreciable by our senses, if there be something in Typhus beyond our perception, it is the same in almost all internal diseases, which are scarcely less mysterious in this respect than fevers.

I here terminate the analysis of this admirable work, the influence of which, through the example of the indefatigable author, will be felt within a few

years in every country, by exciting a spirit of accurate observation, which must enlarge and simplify our conceptions of fever. Louis has added, perhaps, more to the eminent obligations which the profession owes to the medical literature of his country than any other of her distinguished men, by establishing the comparative method of observation, through which we arrive at a more precise knowledge of diseases by contrasting a number of cases of the same affection together, separating the essential from the accidental symptoms and lesions, and placing them in prominent relief with those of other associated diseases. His work on Typhus forms a new æra in the history of fever; but the labours of others in the different latitudes of the globe will be requisite before we can form any conclusions as to the applicability of his views to the continued type of different countries.

I shall now turn to the consideration of the modern fevers of Great Britain.

CHAPTER XIII.

FEVERS OF GREAT BRITAIN.

IN noticing the Fevers of Great Britain, a subject sufficiently familiar to the experience of every practitioner, I shall refer to the writings of Willan and Bateman for evidence of the character of Typhus in London, and contrast their observations with those of Huxham, and finally appeal to the reports of the Irish physicians during the epidemic of 1817, to show that its origin was almost univer-

sally spontaneous, and its mortality trifling as compared with the disease described by Louis.

We have some data, furnished by Dr. Willan* in his Reports, from 1796 to 1800, respecting the fevers of London, which show a great numerical disproportion between Continued and Periodical fevers, and that as the former prevails above its usual average, the latter declines in frequency.

The following Table exhibits the number of cases of fever that occurred in his practice.

	Intermittent.	Summer Bilious.	Slow.	Continued Malignant.
1796. 20 March to 20 June	16	3	11	14
June — Sept.	4	19	—	6
Sept. — Dec.	6	—	3	12
1797. — Dec. — March	1	—	4	9
March — June	3	1	6	9
June — Sept.	5	19	4	10
Sept. — Dec.	4	—	7	23
1798. — Dec. — March	3	—	7	7
March — June	3	6	11	12
June — Sept.	2	18	3	27
Sept. — Dec.	1	—	5	28
1799. — Jan. — March	4	—	4	12
March — June	4	6	12	14
June — Sept.	—	22	9	29
Sept. — Dec.	—	—	7	44
1800. — Dec. — March	2	—	4	68
March — June	2	6	9	83
June — Sept.	5	32	13	83
Sept. — Dec.	3	—	17	82
	68	132	136	572

The general result of this Table is as follows :

	Intermittents.	Summer.	Slow.	Malignant.
1796 (9 months.)	26	22	14	32
1797	13	20	21	51
1798	9	24	26	74
1799	8	28	32	99
1800	12	38	43	316

* Reports on the Diseases of London. By R. Willan, M.D. London 1801.

In 1796, the Intermittents to the slow and malignant fever were more than one half, or 26 to 46. In 1800 they were as 1 to 30, or 12 to 359.

I shall notice some of his observations upon each of these diseases. He says little upon Intermittent fevers, except that they are essentially distinct from the malignant. This may be true of the distinct forms of each; but when we find that the one prevails to the exclusion of the other in different countries, each in some respects obedient to seasons, essentially perhaps autumnal diseases, as far as their maximum prevalence is concerned, heat giving an earlier development to the one, and cold protracting the duration of the other into winter, though often as effectually checked by frost; and especially when we observe the transition of the one type into the other, we are led to believe that they are but modifications of one disease.

Dr. Fothergill*, in his observations on the weather and diseases of London in 1753, speaks in April of Spring fevers, which by moderate evacuations became regular Intermittents, and gave way to bark; and in June, of Remittents, which, after bleeding, an emetic and emptying the first passages, either went off in a few days or became Intermittent and soon yielded to the bark. In July he speaks of "*low depressed fevers*" having appeared, but August and September were hot and dry, and in the latter month Remittents again prevailed. In October, several were attacked with "slow Remitting and dangerous fevers, attended with a coldness, very

* The Works of John Fothergill, M.D.: London 1783. Vol. i. pp. 201, 204, 211 and 217.

little heat intervening for several days, till at length an uneasy heat took its place, and continued without intermission many days; or the rigor was more violent, the succeeding heat more intense and both of shorter continuance, and the concomitant symptoms more natural, the disease, in a fresh florid habit, either speedily terminating in an Intermittent or decreasing about the 14th day with a thick late-ritious sediment." In November the fever was fatal in many instances, chiefly from slower and imperceptible approaches, and in January it was attended by petechiæ.

It is transitions of this nature which justify the idea of the types of fever being modifications of one disease, varying in the same individual, and frequently assuming a difference of character in successive seasons, gradually approximating to a typhoid form, without any difference of cause being suggested to the mind beyond atmospheric influences.

Willan describes the winter of 1795-6 as being without frost till the end of February, and though the mild damp weather was favourable to the production of putrid diseases, the number of infectious fevers was remarkably small. Intermittents however were more frequent than usual, and very obstinate; and the paroxysms, after having ceased for two or three weeks, recurred from exposure to cold, and a cure was not effected till the middle of March.

In speaking of them in the autumn of the same year, he says, "They occur for the most part in persons who have resided some time in the neigh-

bourhood of marshes, though we are not to consider marsh effluvia as the universal cause, as persons constantly residing in the most healthy parts of the metropolis are sometimes affected with Intermittents."

In 1799 he remarks that for 20 years they have not been epidemic in London, though frequent and inveterate in the time of Sydenham; and regular in their occurrence every spring and autumn in the time of Dr. Fothergill. This difference he is disposed to refer "to the practice of draining and to the improved modes of cultivating land in the adjoining counties, (from which either Agues were formerly imported, or the effluvia causing them were conveyed by particular winds,) and not to any change in the air of London."

But in Sydenham's time, before this draining and improved cultivation existed, they were absent for several years successively, and their place was supplied by other forms of fever, which in their origin often appeared to arise out of the periodical type, and in their decline to end in it.

The *Summer fever* was not contagious, and is referred to the bilious Synochus of Sauvages, prevailing from June to September, at first slight, but degenerating towards the autumn into malignant fever. Willan says, "It is the only disease in the southern part of Britain which has any relation to the Continued or Remitting fevers of hot climates, though so mild that it would be vain to attempt to arrange it with any analogous species of fever described by Hippocrates, Galen, or the Arabians." This mild character, however, was not constant, for

in August 1799 a case is spoken of which, though at first not alarming in appearance, was attended by a rash on the neck and arms before the end of the first week, followed by livid spots, and a dry brown tongue; and the patient became tremulous, confused in his ideas, unable to articulate, and died on the 3rd day from the commencement of these symptoms.

“The fever commences with irregular shiverings, followed by great and continued heat of the skin, flushing of the face, frequent nausea, a sensation of heat in the stomach and bowels, of oppression in the chest, with tremors, panting and inquietude, white parched tongue and unquenchable thirst. The pulse is always very quick, and there is a violent throbbing pain in the head, sleeplessness and often delirium, a fretful, turbulent, passionate temper. After several days’ costiveness, a diarrhoea usually takes place on a sudden, with pain, gripings and bilious discharges. On the 7th or 8th day a yellow tinge of the whole surface of the body occurs, which is not unfavourable. The duration of this Synochus is from 18 to 28 days, and in some cases, it *begins to remit* after the 2nd week, and has an exacerbation or paroxysm every day, which terminates by gentle sweating. It is often thus protracted, in a hectic form, to the 36th, 40th, or 42nd day. It begins to change its form in September, and assumes in the 2nd week of its course the characteristics of the malignant or putrid fever, often proving fatal about the 18th or 19th day.”

In 1797 he remarks that it was more frequent than usual in August and September, and was suc-

ceeded "by a proportionate number of cases of the contagious malignant fever." In 1800, a year remarkable for the prevalence of fever, cases of the Summer fever were numerous in July and August, with a frequent eruption of miliary pustules, with or without a rash, hæmorrhage from the nose, a fixed pain across the eyes, and "coma vigil."

In 1796, between the 1st of January and 20th of March, many cases occurred of the *Slow fever*. Willan refers this to the "*Slow nervous fever*" of Huxham, and though later writers have considered it as Typhus, Willan expressly says that it "does not arise from contagion, nor seem to become infectious in its course." Its progress is slow and insidious, so that the first accession can seldom be marked, has no certain termination nor crisis, but assumes at its conclusion a hectic form, which continues some weeks; the tongue usually moist throughout, with aphthous ulcerations in the fauces: one case proved fatal on the 20th day, by a profuse hæmorrhage from the bowels.

In the Table showing the number of cases of fever which occurred in Willan's practice from 1796 to 1800, it will be observed that as Intermit-tents decreased, the cases of Continued malignant fever steadily increased, as well as those of the Slow and the Summer fever. The last, from its being confined to the hottest season of the year, clearly implies the influence of heat; which we have seen in the Inflammatory endemic of the West Indies and of Malta, gives rise to a fever of intense excitement, rapidly followed by inflammation, if not speedily subdued, but the recovery from which is

generally immediate, on a resort to active depletion, unattended by that lingering convalescence and profound debility which is so characteristic of specific fever under an equally violent form.

That a common fever of this kind, the product of heat and the ordinary exciting causes of febrile action, occurs in this country, there can be no doubt; but there is evidence, from the observations of Willan, that malaria, as in warm climates, is sometimes associated with it, as he shows that it sometimes ends as in Intermittent; and he distinctly says, that in September it degenerates into malignant fever; and he refers to the observations of Dr. Fothergill from 1752 to 1754, who repeatedly speaks of a "*slow, remitting, dangerous, treacherous fever,*" and of "*a slow continual,*" and an "*insidious rheumatic fever,*" which Willan considers as identical with his own Continued malignant, though Fothergill has no where remarked that it spreads by contagion; which origin and mode of propagation Willan himself expressly asserts is foreign to his Summer fever, though it degenerates into the malignant, and also to his Slow fever, which later writers contend is Typhus. Fothergill says his Remittent fever often by early depletion became Intermittent, and then yielded easily to bark; so that, in this confusion of names, we have a *Summer bilious fever* occasionally degenerating into an Intermittent, and into Typhus in the autumn; a "*Remitting fever,*" passing into an Intermittent, and an "*insidious slow fever,*" neither of which originates in, nor is propagated by contagion; and lastly, a "*Continued malignant fever,*" referred to contagion,

though, like the fevers of warmer climates, it is, in ordinary years, generally stopped by frost.

In September 1796, when the Summer fever was observed by Willan to assume in its progress the characteristics of the malignant putrid fever, he remarks, that fevers usually appear in the same month, "which from their commencement exhibit symptoms of malignancy, being attended with a brown, dry tongue, violent pain of the head, delirium or coma, deep-seated pains in the limbs, petechial spots, and hæmorrhagy. These fevers become highly contagious, especially when they occur in close, confined situations, and in houses where little attention is paid to cleanliness and ventilation. The disease is extended by infection in October and November, but its progress is generally stopped by the frosts of December."

It might be argued, as the cold increased, and the poor congregated together in their wretched habitations, in which there would be less ventilation than in the autumn, that the artificial temperature maintained in their crowded and close apartments, would eminently favour the diffusion of a contagious disease; but Willan repeats more than once, that frost checks the propagation of malignant fever. Yet in August 1799, when the number of cases was greater than usual, he says, this "might be partly owing to the long series of damp and windy days, which confined most of the individuals of families at home, and prevented ventilation by open windows."

The fact however was, that a series of sickly years had commenced in 1798, and fever rose in

amount annually till the end of 1803; and though Bateman refers it to the scarcity which followed the years 1799 and 1800, we have clear evidence from Willan that it began before that scarcity existed; for he says, "from the end of June to October 1798, the weather was mostly warm, cloudy, and moist, with very variable winds in August and September; and such a season after midsummer always favours the extension of infectious fevers, and heightens their malignity, as was exemplified in September, in which there occurred a greater number of contagious malignant fevers, both in the city and adjacent villages, than had been known for many years before; 1 of every 5 or 6 died; whereas from observations formerly made, the proportion of deaths was not more, in the most unfavourable seasons, than 1 in 7, and at favourable periods but 1 in 20."

In 1799 the same allusion is made as early as July and August to the great frequency of fever; it was more extensive in September, and in the month ending November 20th it is said to have been "the most frequent and the most fatal of all acute diseases, the mortality having been 10 in 35, or nearly one third, while the usual proportion west of Temple Bar is 1 in 17 or 18. The habitations of the poor, within or adjoining to the city, have suffered greatly, and some have been almost depopulated, though the rumour of the Plague was totally devoid of foundation.

"This contagious malignant fever was, in September, attended with a dull pain of head, great debility or lassitude, pains in the bones, trem-

blings, restlessness, slight delirium, small frequent pulse, heat of the skin, thirst, tongue with a dirty white, and afterwards a yellowish brown fur. In this form the fever continued 13 days without any dangerous symptom, then suddenly disappeared, leaving the patient for some time languid and dispirited. All the individuals of a family were successively affected with the same train of symptoms, many of them so slightly as not to be much confined to their beds. To a contagious fever alone of this mild form Cullen should have applied the name of *Typhus mitior*. He has improperly comprised under it the Slow Nervous fever of Huxham and Gilchrist, which may rather be considered as a species of Hectic, and is not received by infection.

“ In October and November the disease, as usual, assumed its more dangerous form. The pain of the head was at first excruciating, with great confusion of ideas; a total loss of strength suddenly took place, and the limbs felt sore, as if they had been bruised all over. The pulse was weak and irregular; a thick sordid brown fur covered all the upper part of the tongue, which became hard, dry, and almost immovable; and the teeth covered with a brown or black crust. There was a smarting or burning heat of the skin, which conveyed an unpleasant benumbing sensation to the fingers and wrist on feeling the pulse. The eyes were frequently suffused; the headache terminated in the second week in coma, stupor, with great insensibility and deafness, symptoms which were more favourable than agitation and watchfulness. In the fatal cases, there occurred, a few hours before death,

a laborious respiration, with a fluttering irregular pulse, difficulty of swallowing, and sometimes hic-cough. A favourable crisis was made by sweating, accompanied in some instances by a sensation of coldness. *Diarrhœa took place only in one patient.* The critical days seemed to be the 7th, 12th, 14th, 17th and 21st; the most numerous crises on the 12th and 14th. The changes, whether for recovery or death, took place very suddenly. Petechial spots were not observed in any case, nor alternations of cold shiverings with flushes of heat, which most writers describe as the primary symptoms of malignant fever. Bark was of no considerable advantage, unless emetics had been administered before the end of the 4th day. In the most unfavourable state of the disease blisters produced a remission of the fever, made the pulse more free and regular, and procured rest. The state of the atmosphere must, undoubtedly, have caused the great extension and aggravated symptoms of this malignant fever. From June 22nd to November 17th, only 8 days were free from rain."

In the succeeding month it is remarked that, "since the commencement of the present frost few malignant fevers have appeared;" but in "the mild open weather of January, and the beginning of February, 1800, the fever was again rapidly diffused, and among the poor the mortality was very considerable. It will scarcely appear credible that they do not put clean sheets on their beds three times a year, never wash their blankets and coverlets; from 3 to 8 individuals sleeping in one bed. The room occupied is either a deep cellar, almost inaccessible

to the light, and admitting of no change of air, or a garret with a low roof and small windows, the passage to which is close and dark to lessen the window-tax, and filled not only with bad air, but with putrid excremental effluvia from a vault at the bottom of the staircase; washing or some other disagreeable business is carried on, the apartments clogged with furniture or utensils of trade, preventing the salutary operation of the broom, and favouring the accumulation of a heterogeneous fermenting filth. It cannot be wondered at, that in such situations contagious diseases should be formed, and attain their highest degree of virulence. In whatever part of the house a fever commences, it is soon diffused among the inmates and visitors, especially in seasons which favour its progress, like the last autumn and winter. Children and women constantly residing in infected apartments seem to get habituated to the action of the fomites. Men and boys, by means of fresh air and exercise, shake off the effects of the virus, and escape long unhurt. But if, through taking cold, or any other cause, they should be confined to the house for some days, they assuredly take the fever. So it happened in the late unfavourable season; whoever kept his bed for a Catarrh, Pleurisy, or Inflammation of the lungs, within 3 or 4 days caught the fever, and almost all so affected died. The children are infected from the new source of contagion; and the mother, after closing the eyes of her husband and, perhaps, of more than one of her offspring, sinks exhausted with grief, watching and fatigue, the last victim to the disease."

The fever in the spring of 1800 is said to have greatly predominated over the usual series of vernal diseases ; but its fatality was not so great as in the autumnal months. It prevailed also in the hot weather, unattended by coma, having, at an early period of its course, a wakeful and active delirium, a quick agitated pulse, and symptoms of violent irritation. Willan remarks, that contagious malignant fevers are seldom numerous during the hottest part of summer, and some years wholly disappear at that season, probably from the rooms being then less crowded and better ventilated. " That the heat or dryness of the air cannot alone produce such an effect, the present summer affords a sufficient proof. The number of infectious fevers in it has exceeded that in most other summers, probably because the unfavourable season preceding had caused so general a diffusion of them, that the fomites of contagion, which are always preserved in the dwellings of the poor, acquired a tenfold degree of virulence by the succession of persons affected, and continued their baneful operation even on subjects not otherwise predisposed to fever." He argues also that heat does not destroy contagion, " from the rapid communication of the dreadful fever which has of late nearly desolated the cities of America and the sea-ports of the West Indies."

The above is the sum of Willan's observations on the fevers of London from 1796 to 1800, as he had opportunities of seeing them in the patients of the Carey-street Dispensary, and in private practice. He says, " Two thirds of the cases in the Reports occurred among the lower classes of people, mostly

patients of the Dispensary near Temple Bar; the remaining third was the result of private practice in the upper ranks of society. The increased number of cases in 1799 and 1800 must in a great measure be referred to the flourishing state of the Dispensary, by means of which the medical attendants became more fully acquainted with the diseases of the district, extending from Smithfield and St. Paul's to St. Martin's Lane and Tottenham Court Road." The cases, of course, referred to were of all kinds of diseases, of which fever formed but a small part.

The progress of fever in the year 1796, in which Intermittents were most numerous, will show the apparent relation between the different forms, and that as one arose the other declined. The Report terminates on the 20th of each month in this year, commencing from the 20th of March.

1796.	Intermittents.	Summer.	Slow.	Malignant.
April	5	0	4	11
May	5	0	4	2
June	6	3	3	1
July	2	4	0	0
August	2	3	0	0
September ...	0	7	0	6
October	2	0	1	4
November ...	1	0	0	4
December ...	3	0	2	4
	26	22	14	32

The vernal Intermittents declined in June, as well as the Slow and the malignant fever, to which they stood as 16 to 25, and as they declined, the Summer fever arose. This, in September, Willan admits in its course degenerated into the malignant; and this last, after having been absent for the two preceding

months, equalled in September the number of cases of the summer fevers; and from October to the last of December, the proportion of Intermittents to the malignant fever was as 6 to 12, while intermediate between the two in nature, as it were a mild Typhus in its beginning, and breaking towards its decline into an Intermittent, or, as Willan says, assuming a hectic form, the slow fever stands to the amount of 3 cases.

This progress is very analogous to the fevers of other climates; and the different modifications would seem to depend upon some general causes, as those of season, giving rise in the summer to the irritable bilious form of fever; and in the spring and autumn to the Intermittent and Typhoid, the differences of quality or concentration in the remote cause, or of individual predisposition, probably determining the form which fever assumes in different persons.

The question of contagion is affected by the admitted non-contagious character of the Intermittent, the Summer and the Slow fever, and the disappearance in ordinary years of the malignant on the occurrence of frost. This is attributed to cold destroying contagion, but in those years in which fever is epidemic, no such effect is produced by cold, any more than by the ventilation of summer, which checks the diffusion of fever in common, but not in epidemic years. This would seem to imply the existence of a general cause in the latter, which is equally called into operation both by cold and heat, and that fever does not depend upon so local and fixed a cause of diffusion as contagion. When the

general influence is less in intensity, the progress of fever in London appears to be the same as in warmer climates, commencing in summer, prevailing most in autumn, checked by the winter's cold, to reappear in the variable temperature of spring. But the fever is different in its character from that of lower latitudes, being principally of the continued type, yet associated with a few cases of Intermittents in the spring and autumn, and occasionally breaking into them on its decline; and in itself varying in degree, so that its milder form is said neither to arise from, nor to be propagated by, contagion.

In 1796, during the nine months, the average of cases of Typhus were 5 per month, and of Intermittents, 3 per month; in 1797, 6 per month, and 1 per month; in 1798, $8\frac{1}{2}$, and $\frac{3}{4}$ per month; in 1799, 11, and less than $\frac{3}{4}$; and in 1800, 30, and 1 per month.

Typhus.	Intermittents.
1796... 5 per month.	3 per month.
1797... 6 _____	1 _____
1798... $8\frac{1}{2}$ _____	$\frac{3}{4}$ _____
1799... 11 _____ less than	$\frac{3}{4}$ _____
1800... 30 _____	1 _____

So that as the Continued arose in number, the Intermittents declined; but in 1800; when Typhus was epidemic in a great degree, there was a slight increase in the number of Intermittents, from 8 in 1799 to 12 in 1800, as if the cause which was concerned in the production of Typhus gave rise to the slight increase in the number of Intermittents.

The Continued fever has frequently a variable progression, as to number, which is inconsistent with the steady advance of a disease depending upon contagion, which operating, as it would do, in the close confined haunts of poverty, should exhibit something like a proportionate increase. In May and June, 1798, the average number of cases was 8 per month; in the three subsequent months it was only 10; and in the three last months of the year only 11. In 1799, from the 20th of March to the 20th of April, the number of cases of Typhus was 11; in the month after, only 7; in the next, 8; in July, only 3. In August, they rose to 11; in September, to 24; in October, they fell to 14, rose again in November to 25, and fell in December to 12. Had contagion been the cause of the disease, it is difficult to imagine why the number of cases in October should have fallen so low. In the first quarter of 1800, they averaged 24 per month. Willan says, that in 1799 parts of the suburbs were nearly depopulated, and that rumours of the Plague prevailed, but the disease was not apparently so rife and fatal in the city; yet it existed in the district under his observation, but was comparatively mild in its character in September, though "all the individuals of a family were successively affected, and many so slightly as not to be much confined to their beds." This irregularity of prevalence and intensity is exactly in correspondence with what is observed in Marsh fever of a periodical type, where generally contagion is not supposed to be at all concerned; and it, in fact, belongs equally to Plague, as if local causes were earlier developed in some

places than others, for the anomaly cannot be explained on the supposition of the want of opportunities for the conveyance of contagion; for the disease actually exists in all parts, and is only milder in one part than another: and where the mildest cases exist, there others are occasionally met with differing neither in malignancy nor in fatality from the cases where it is generally the most formidable, and *vice versâ*. That local causes are concerned in its development is implied by its limitation to particular districts, for the acknowledged contagious diseases spread in spite of every precaution through all classes of society. But Typhus is the disease of poverty, misery, and filth, and does not propagate itself even by contact in a pure atmosphere. If it spreads in an impure one, it is far more probable that that impurity is the cause, than a *matter sui generis* of contagion; for where this specific contagion exists, we find the disease is the same at the equator or the poles, in summer or winter, while fever varies infinitely in character from the Ague of southern climes to the Typhus of the north, with intermediate shades of affinities; and yet in the extreme points the one prevails to the exclusion of the other, though we cannot imagine that the causes to which either is ascribed are unknown in either extremity; that malaria, which gives rise to Ague in the south, does not exist in the north; or the filth of the north, which gives rise to Typhus, does not exist in the south. A difference of mean temperature is the only apparent distinction between the one latitude and the other; and if, under its influence, a fever arises which has no evident

dependence upon, or connexion with, contagion in the south, and we find that that of the north obeys the same general law as to season, though varying in type and character, a presumption arises of the same causes, modified in their effects, being concerned in the production of both diseases, and that they are essentially one and the same; and that contagion is not required to explain the diffusion of the fever of the north any more than that of the south, for if it arises in one from general causes, it may in ten, or in hundreds.

Dr. Bateman * affords more ample materials for judging of the Typhus of London, though by abandoning the doctrine of its exclusive origin from contagion, and questioning the influence of local sources of impurity over its production, he leaves scarcely any other cause sufficient to explain its epidemic prevalence than the occult qualities of the atmosphere, to which Sydenham long ago referred the epidemics of his time.

Bateman considers deficient nutriment as the principal source of epidemic Typhus; but its occurrence among the well-fed peasantry of North America, whose condition admits of no possible comparison with the poor of the cities of Great Britain, at once disproves his opinion. Louis's observations in Paris led him to doubt the necessary connexion between Typhus and want; and the fact which I stated in the former volume of the coincidence of the observations of Rush in Philadelphia, and of Gallup in Vermont, of the almost contemporaneous

* Succinct Account of the Typhus of this Country, by T. Bateman, M.D. 2nd edit., London 1820.

aggravation of the fevers of their respective districts, clearly points to the operation of a general cause, to which want could not, from the general prosperity of the people, be in any degree accessory.

The remarkable coincidence of epidemic fevers throughout Great Britain, Ireland, Italy, and the Ionian Islands, in 1817, equally implies the existence of a similar general cause; and the difference in the type of these fevers in the different latitudes of America and Europe is very instructive as to their nature and affinity: and as in common years we find precisely the same diseases limited to particular spots, we are obliged to resort to the conjecture that local causes, which appear to operate exclusively at one time, are at another as essential to the development of epidemic fever, but that they are proportionately extended in their range, or more powerful in their operation, through a more general predisposition, occasioned by a peculiar state of atmosphere.

Bateman says, that "as epidemic fever is unquestionably generated in the first instance by *defective nutriment*, so we cannot doubt that it continues to originate in many successive individuals, during the existence of its cause, independently of any communication with each other. It happens constantly that persons are seized with the fever in insulated situations, or where no probability of communication with the diseased exists; and two or three members of a family are occasionally seen to fall sick on the same day, as if some common cause had influenced all. Nor is it unlikely that they should even be affected in succession under such

circumstances, without deriving any infection from each other. For it seems probable that the influence of deficient nutriment on the body is rather a predisposing than an exciting cause of fever, producing that condition of the system which is liable to be thrown into fever by the slightest disturbing cause, as by anxiety, fatigue, exposure to cold, intemperance, &c. ; and the actual commencement of the fever in persons so predisposed will be accelerated or postponed by the accidental escape from, or exposure to, the exciting causes. We cannot, therefore, doubt that a great number of the cases of fever which occur during an epidemic season are *entirely independent of contagion* in their origin.

“The evidence, however, of the existence of infection about the persons, bedding and clothing of those who are affected with fever appears incontrovertible. Even those who deny the production of a specific contagious matter admit that the morbid exhalations and secretions accumulating about the persons and coverings of the sick, constitute a medium of infection capable of generating fever. The advocates, therefore, for both these doctrines agree in admitting that this infectious product of fever, accumulated and concentrated in the uncleanly and unaired habitations of the poor, where it chiefly originates, becomes a great and formidable agent in spreading the epidemic malady far beyond the limits to which the predisposing cause would carry it. Numberless cases could be quoted from the journals of the House of Recovery in illustration of the progress of fever, from individual to individual, by communication. I shall content

myself with mentioning one family of 10 persons; 9 of whom were admitted in succession, after 1 had died; only 5 of these resided together, the others having caught it by visiting them. The majority of the patients admitted in 1817 consisted of men and their wives, or small families, or lodgers from different apartments of the same house."

According to this statement of Bateman's views of the origin and diffusion of fever, it appears that he considers deficient nutriment as the predisposing cause, and that any disturbing occasion, as anxiety, fatigue, &c., may excite it in those thus predisposed; without any influence whatever of contagion; but that the evidence of the existence of infection about the sick appears to him incontrovertible; and that this infectious product of fever, accumulated and concentrated in the uncleanly and close habitations of the poor, becomes a formidable agent in spreading the epidemic beyond the limits to which the predisposing cause, viz. deficient nutriment, would carry it.

I have already remarked that want of adequate nutrition can have no concern whatever in the production of Typhus among the people of North America, especially in the Eastern States, where Gallup speaks of it as the endemic disease of Vermont, and Smith as the exclusive form of fever on the banks of the Connecticut river and all its tributary streams. Any one familiar with the prosperous condition of the citizens of New England, so far as all the essential means of subsistence are concerned, will therefore reject the idea of want of food being a necessary predisposing cause of Typhus,

though it may unquestionably stand among the other disturbing or exciting causes in those countries and in those years where it is sensibly felt. It is indeed very difficult to admit any analogy of condition between the thriving peasantry of New England and the wretched poor of the cities of Great Britain; for the one class is well fed, well clothed, comfortably lodged, residing in an open country, with perfect ventilation around them, free from all undue anxiety of mind, easy in circumstances and in the enjoyment of the ample fruits of their labour and industry; while the other is depressed by want, surrounded by almost insuperable difficulties, indifferent to the ordinary means of comfort, a prey to anxiety and distress, suffering from the extremes of want, hardship and fatigue, living on a poor diet, addicted to excesses, exposed to cold and damp, often without that steady demand upon their physical energies which by cheerful and successful labour might enable them to counteract the depressing and injurious influence of a low temperature; and living in crowded ill-ventilated streets and alleys, where the sun seldom shines, and where the atmosphere is contaminated with every noxious effluvia that filth can generate. And yet Typhus annually affects more or less both these classes of persons; prevails in some years epidemically and fatally among the one as the other; and so far as its symptoms go, is unquestionably the same disease, limited in either continent within certain latitudes, and obeying the same laws of season, being essentially an autumnal disease, generally, like the periodical fever of more southern climates, stopped by the cold of winter, but later

in its annual development, and consequently often protracted in epidemic years through the milder winter of Britain and the severe one of America; frequently arising under circumstances which preclude all idea of contagion, and existing in hospitals, where cleanliness and ventilation are attended to, for years, without the frequent and inevitable contact of the sick, the inhalation of his breath, and the emanations from his body, being adequate to the production of the same disease in those about him.

Bateman quotes the authority of Lind for the fact, that the contagion of fever will not pass to the distance of many feet through the air, but is communicated by close approach to the sick or by fomites. Yet he equally adduces the authority of Haygarth, who says that for 12 years the contagion of fever was never known to extend from the fever wards of the Chester Infirmary, situated within 13 yards of other wards of the same building; and of Dr. Currie, who states that contagious fever had not extended itself during 10 years in any one instance from the fever wards in the Liverpool Infirmary or workhouse, though the latter had sometimes contained 1400 persons.

Bateman adds the weight of his own testimony. The original "London House of Recovery," he says, "was a small private house in contact with thin and slender-built houses on both sides. During 14 years its wards were more or less occupied by patients in fever, yet not only did the families inhabiting the adjoining houses escape infection, but no fever was known to have occurred in its vicinity, I may add one fact, ascertained by 16 years' experi-

ence in the London House of Recovery. It is generally admitted, and we may quote the high authority of Dr. Lind in proof of the opinion, that the body of the diseased kept neat and clean is not so liable to impress the taint, as his late wearing apparel, dirty linen, or any uncleanness, long kept in that impure state; these last contain a more certain, more concentrated and more contagious poison than the newly emitted effluvia or excretions from the sick. All the patients admitted into the London House of Recovery are transported in a litter by two men employed by the institution, enveloped in their uncleanly and tainted apparel. Yet the porters, who have been daily employed for the last 18 months in conveying this double source of contagion, and assisting them in and out of the litter, have never received the infection. Neither have the washerwomen, employed during the whole period of my attendance on the House of Recovery, occupied almost constantly in washing the apparel brought in by the patients, as well as the bed linen, often much soiled by their excretions, and the cloths used by the patients in the house, ever been affected with the fever.

“It is manifest, then, that infection cannot be caught in the open air, even by a close approximation to the most tainted sources of it, the uncleansed person and contaminated apparel of the sick; that to be rendered communicable it must be condensed and accumulated in a confined and unchanged atmosphere, or in the apparel or bedding which has been long in contact with the patient. To prevent the accumulation of the virus we must disarm

it, by a free ventilation, by a frequent change of the bed and linen, by ablution of the skin, and by the speedy removal of all the excretions. When these are pursued in detail, the most malignant fever may exist in the very bosom of a family, without extending to another individual, of which numberless examples might be adduced.

“During the 14 years in the course of which I have almost daily been *in contact* with persons labouring under contagious fever, not only myself but all the nurses have been thus preserved, with one exception, down to the period of the present epidemic. In the instance excepted, a nurse slept in a bed just quitted by a convalescent without changing the linen. It is no disparagement to the system above described that some of the nurses and the matron have been infected during the present epidemic, which has kept the wards constantly full. The impossibility of maintaining a free ventilation night and day during the cold weather; their perpetual exposure, in close contact, to the breath and discharges of the patients, while feeding, moving, or washing them, changing their beds and linen, and even stripping off their infected clothes on admission, might be sufficient to counteract the salutary operation of any general system, however efficacious.”

This passage, in my mind, is conclusive of the non-existence of a *contagion sui generis* in Typhus, and of contaminated air being as much the source of the fever as malaria is of Intermittent fever in its local and defined limits; and as the circumstances under which Typhus arises in New England are

in strong contrast with those which generate it in London, and, as in the instance of the banks of the Connecticut river, we find it taking the place of the Intermittents and the Remittents of the south, I cannot doubt that the product of marsh effluvium, or the emanations from the alluvial soil of rivers, is analogous in its character to the effluvia of the crowded and filthy parts of cities, and to those exhalations which accumulate in the wards of a crowded hospital, from the human body, its secretions and excretions.

There seems to be a predisposing power in particular states of the atmosphere in epidemic years, to which many causes may contribute as accessory or exciting agents, and these may as reasonably be referred to as contagion; since a disease which is admitted to arise in a multitude of instances, wholly independent of contagion, cannot be necessarily supposed to be propagated by other causes than those which originally developed it.

The fever of New London (vol. i. p. 570.) is a striking example of the power of animal effluvia over the generation of fever; and the aggravation of its forms in the impure air of the cities of North America, as compared with the open districts of the country, would seem to indicate the pernicious effects of local atmospheric taints.

The wide diffusion of fever in epidemic years, as compared to its local range in common years, proves a general predisposition over a wide surface of society, and weaker exciting causes are then probably adequate to the generation of disease. If fatigue, anxiety, watchfulness, distress, are adequate, as

Bateman admits, to the production of fever in the crowded habitations of poverty, wholly independent of contagion; if Typhus can be generated by a contaminated atmosphere, arising, as some contend, from healthy persons being crowded together; or if it can arise from the putrefactive effluvia of hospitals, where patients, ill of other diseases, create an impure atmosphere around them; there is no anomaly in the occurrence of fever in the House of Recovery, during the epidemic of 1817, among the nurses and the matron, and no necessity of resorting to contagion to explain it, especially when the 14 preceding years were inadequate to produce it, with but one exception, in the attendants of the sick, who must have required the closest contact, the constant undressing, washing, removing, feeding, and supporting in the extremities of fever, with all the implied and inevitable exposure to the breath and perspirable matter of the body. If the excepted case be availed of to prove contagion, it might be said that 1 case in 14 years affords but a feeble evidence in support of it, especially as the bed was of a convalescent, with linen less liable to infect than the filthy clothes, and the soiled linen of the sick, handled and washed for 14 years with impunity.

In the case of the family of 10 persons, 5 of whom were visitors at the house where 1 had died and 4 were ill, it may be urged that the visitors were exposed to the same atmosphere which probably excited the disease in the first victims, and that the anxiety, fatigue, and distress inseparable from attending sick relatives, would as reasonably

account for the generation of fever in them, as in those instances where successive cases of disease occur in a family, and, according to Bateman's admission, without the necessary implication of contagion.

But it is the evident relation which Continued fever bears to the periodical that affords a strong presumptive argument against its originating in contagion; for if the Intermittent and Remittent fevers of the south are represented in the north by Typhus, from the modifying influence of mean temperature over the type of fever, there is as much reason to insist on contagion in the one as the other. The limitation of Intermittents to particular soils productive of malaria, is like that of Typhus to the contaminated atmosphere of the haunts of poverty; and though in epidemic years it is difficult to suggest any preventative against either disease but a removal from their local sources, we can have no question of the influences of those causes productive of cleanliness and ventilation in checking the progress of disease in common years among the poor. The benefit derived from gestation in Typhus, so much insisted upon by Jackson, Wade, and others, is, no doubt, in a great measure attributable to a fresh atmosphere, and is analogous to the effect produced in Intermittents by a change of residence. The same immediate amelioration of the condition of the sick was observed in the Plague of Egypt among the soldiers of the French army, and in either disease this would seem to imply the large share which a local atmosphere has in generating and protracting fever.

Bateman affords decided evidence of the Typhus of London being generally obedient to the influence of the same seasons as the fevers of more southern latitudes. "At all times," he says, "there appears to be a greater disposition to fever in London during the autumnal months, which diminishes with the approach of winter. The epidemic of 1817 was most prevalent from the beginning of August to the middle of November. The admissions into the House of Recovery were

June	28
July	22
August	67
September ...	81
October	109
November ...	92
December	68

"Whether the extreme mildness of the winter may have been conducive to the continuance of the disease it would be difficult to determine, but it has happened generally during the partial occurrence of fever in former years, that few patients have claimed admission in January and February. It has been supposed that the cold months were more likely to occasion the propagation of fever, by inducing the subjects of it to shut themselves up for the purpose of excluding the cold; but they are at all times unused to the wholesome practice of ventilation, even when their habitations will admit of it, and the fact appears to militate against that opinion."

The admissions into the House of Recovery from its first institution to 1817 were as follow:

1802	164	1810	52
1803	176	1811	43
1804	80	1812	61
1805	66	1813	85
1806	93	1814	59
1807	63	1815	80
1808	69	1816	118
1809	29	1817	760

It will be evident that the germs of the epidemic had taken root in 1816, and Bateman acknowledges, that in the autumn of that year "*before the influence of the scanty harvest could be felt,*" there was an increase in the usual number of applications for admission. In September and October fever appeared in the courts about Saffron Hill, and among some young people in a silk factory in Spitalfields, but who resided with their families. "*As usual,*" this fever subsided on the approach of winter, for in January, and the early part of February, which was, however, remarkably mild, few patients were received. In March the fever re-appeared near Essex Street, Whitechapel, where the silk manufacturers resided, as well as near Saffron Hill, Old Street, and Clerkenwell; and in April in the parish of Shadwell, in the over-crowded workhouse of which it spread rapidly, upwards of 30 patients having been sent from thence in 6 weeks; other poor-houses, especially those of Whitechapel, St. Luke's, St. Sepulchre, and St. George, Southwark, became much infested with fever in the course of the summer and autumn. It was no matter of surprise that these abodes of poverty should become the seats of contagious

fever, under the concurrent circumstances of dearth and deficient employment, which threw into their wards crowds of half-starved beings, many of them deriving their sole claim to relief from having slept in the streets of the parish, and who were already seized with fever. Paupers labouring under fever were constantly transferred to the work-houses from their deserted habitations, so that the disease could not fail to spread in these houses; which were already so crowded that some of the patients complained they had lain six in a bed, or even on the floor. The fever, however, was not confined to these resorts of paupers. It showed itself during the autumnal months in the habitations of the poor, in almost all the close and crowded districts in the eastern and northern parts of the town, and in the Borough; most prevalent in White-chapel, the vicinity of Smithfield, and in Southwark: But it was seen occasionally in various other parts of the town, in the courts of Shoe Lane, Holborn, Clare Market, the Strand, at Somers Town, and, *lastly, in St. Giles's*. It is rather singular that this district, proverbially the receptacle of beggary, should have remained nearly free from the epidemic till November; at which period it became the source of the most numerous supply of patients to the House of Recovery, at a time when the fever appeared to be *abating in the eastern districts*."

I cannot subscribe to the opinion of Bateman, that the House of Recovery, which offered "accommodation to nearly 70 patients, afforded the *only practicable means* of arresting the progress of such a

calamity." That an epidemic spread over so vast a city could be controlled by such inadequate means, especially if the doctrine of contagion from fomites is to be admitted, is an assertion which contradicts his former position, that the danger from fomites with which the wretched habitations of poverty must have been filled, is greater than that from the intercourse with the sick themselves. The limitation of the epidemic on its first appearance to the eastern and northern parts of the metropolis; its subsequent extension to the districts of Holborn, of Clare Market, and the Strand, leaving untouched the parish of St. Giles, the notorious haunt of misery and want, till November; and its prevalence in this last situation when it was declining in the still populous districts where it first appeared, are wholly inconsistent with the idea of a cause so susceptible of extension in all directions as contagion; and though inexplicable on any supposition as to the causes of fever, yet it presents an analogy with the anomalous and inordinate diffusion of Intermittent and Remittent fever, the capriciousness of the visitations of which constitutes one of the most singular circumstances of their history, frequently occurring in spots, and shedding their utmost virulence within a defined limit, when another spot, apparently as exposed to the causes of fever, and in the vicinity of the epidemic district, escapes untouched, to be equally ravaged, however, when health is restored to the first scene of its distresses.

I would particularly refer for a memorable proof of this fact, in addition to those I have instanced in

North America, to the admirable Report* on the Epidemic in the Madras Government from 1809 to 1811, by Dr. Ainslie and his colleagues, one of the most interesting and instructive papers in the records of medicine. At p. 84. they remark that the province of Tinnivelly seemed for a time exempt by Providence from the evil which was destroying so many thousands in countries lying but a short distance from it. But it soon appeared that the evil was only retarded. The fever had appeared in a trifling degree in March, April, and May 1810; but little was heard of it till February 1811, when it proved more fatal than in the other provinces, destroying 38,202 persons in 5 months, a mortality of $5\frac{1}{2}$ per cent. This epidemic was Intermittent and Remittent fever, prevailing over a tract of country lying between 8° and 11° north latitude; and in 16 months, out of a population of 1,828,610, it destroyed 106,789 persons. The authors reject all idea of a contagious property belonging to it, and remark that Jackson says no medical fact is better established than that diseases of this nature are not contagious. The causes of the epidemic were referred to "great irregularity of season and an unnatural state of the atmosphere. The rains and winds were irregular, floods extensive, and a singularly oppressive, hot, steamy vapour rose from the ground, which gave a sensation not unlike what is experienced from a crowded assemblage of people in hot weather. During the 3 years the different sea-

* Report on the Epidemic Fever in the Provinces of Coimbatore, &c., in the Madras Government, in 1809, &c.; by Dr. W. Ainslie, Mr. A. Smith, and Dr. M. Christy. London 1816.

sons varied from their usual course, inordinate rains succeeded to uncommon drought; the north-east and land wind was weak and of unusual duration, the most distressing lulls alternating with sudden chill blasts from various quarters; and what appeared to have brought the mischief to a crisis, was that heavy rains and close sultry weather occurred at those times which are usually distinguished by dryness, and by those ventilating breezes which dispel the dews and vapours after the north-east monsoon. This stagnation, vegetable putrefaction, dampness, filth and offensive effluvia, were destructive in low and ill-ventilated situations. The crops failed, though the bad harvest could not be considered as one of the causes of the epidemic, as it began before the failure; but the unwholesome food, by producing debility, may have contributed to extend it and make it more fatal." (p. 72.)

The periodical type of this fever is in strict accordance with the facts I have stated in support of the idea of the influence of a high mean temperature; and contrary to the observations of the learned reviewer of the Report*; the difference which this epidemic fever presented to the Yellow fever of America does admit of a satisfactory explanation.

In the journal alluded to it is said that this difference "will not easily be explained by those who consider Yellow fever only as a higher grade of marsh Remittent fever, depending on high atmospheric temperature." I have shown, however, that this high temperature is only one of the causes of

* Edinburgh Medical and Surgical Journal, vol. xiii. p. 76.

Yellow fever, and that the great excitability existing in the unseasoned constitution is essential to its development. The natives of the Madras provinces, like the natives of Charleston and of the West Indies, from their habitual residence in a climate of an equable and high mean temperature, are insusceptible of manifesting the symptoms of Yellow fever, though they fall victims, especially in epidemic years, to the lower grade of the marsh Remittent. It would not be difficult, however, to prove that cases analogous to Yellow fever do occasionally exist in the East Indies, and that a disease is known there analogous to Typhus. I would refer to the paper of Dr. Nicoll on the fevers of Seringapatam, in vol. xi. of the Edinburgh Medical and Surgical Journal, p. 286; and to the fact that Dr. Ainslie, in the Report alluded to, speaks of Typhus as being known to the Hindoos under the name of *Kistnah Doshum*, (p. 130,) which I suppose is applied to the advanced stage of the Remittent fever, for in speaking of the changes which the fever underwent, it is remarked that "Tertians are sometimes changed into Remittents, irregular or *Continued* fever. In its natural form the epidemic was not contagious, whatever might happen in cases which had been allowed to pass into *low Continued fevers*, attended with the usual symptoms of putrescency."

There is sufficient reason in this epidemic to suspect that the causes of the failure of the crops were equally those of the fever, and it is evident that deficient nutriment was not concerned in the first production of disease, as this was manifested before

the failure of the harvest was felt, as Bateman admits was the case in 1816 in London.

Mr. Twining*, however, affords the clearest evidence of a fever like Typhus occurring in Calcutta during the *cold* months. It is marked by the insidious invasion, the lassitude and languor, the meteorismus, low excitement, stupor, delirium and tremors of Typhus; and he says, "After a protracted fever of this sort *superficial ulcerations of the mucous membrane of the small intestines are found.*" In two fatal cases also the spleen was large and soft. This fever is *rare except in the cold season*, and often takes on a remittent form by the 8th or 9th day. These facts appear to support the idea I have entertained of the influence of temperature over the type and symptoms of fever, and to show that Typhus has a wider range than Bancroft ascribed to it. It will be interesting hereafter to know more particularly whether the glands of Peyer are affected in the Remittent fever and Dysentery of Bengal. Twining says, "In those who die of Dysentery, the last 3 or 4 inches of the ilium are generally affected with superficial ulcerations," and "the glands of the mesentery are often enlarged, the corresponding portion of intestine usually containing a large ulcer."

With respect to the epidemic in London in 1817, Bateman expresses his conviction of the identity of fever under all its modifications, examples of which are often met with, he says, in persons of the same family. "In the instance of a man and his wife, who were brought into the House of Recovery to-

* Clinical Illustrations of the Diseases of Bengal, by W. Twining, Calcutta 1832, p. 658.

gether, the former was affected with the mildest symptoms of fever, which scarcely confined him to his bed, while his wife was in a state of stupor, covered with petechiæ and vibices, and exhibiting the most formidable symptoms of the worst form of Typhus. Yet these extreme degrees manifestly originated from the same cause, and it would be unphilosophical to account them different kinds of fever." He quotes Dr. Percival of Dublin to the same effect.

The great characteristics of the epidemic were "the universal expression of debility, and the general absence of preternatural heat." In children, and in persons under seventeen years of age, the fever was slight, commencing with lassitude, shiverings, and headache, followed by heat and dryness of the skin, thirst, aching pains in the loins and limbs, and some oppression of the præcordia; occasionally nausea and vomiting in the beginning, with loss of appetite, and the tongue covered with a thin white mucus; with seldom any tendency to delirium, beyond a slight confusion in waking from sleep; the symptoms frequently subsiding spontaneously after a week or ten days; but if the patients remain at home, they are very liable to relapses. Bateman, in alluding to this *mild* form of fever in children, says that, he constantly had occasion to remark that the parents and adult members of the family were afflicted with the most formidable symptoms of Typhus, "thus affording the most demonstrative proof of the identity of the disease under its opposite characters." Some adults, especially during the summer, were affected also with

a mild form of fever, sometimes coming on gradually with a sense of feebleness, inactivity, weariness on slight exertion, loss of appetite, and depression of spirits, and a frequent sense of creeping and chilliness, especially down the back, the individual continuing to go about his business for a few days, before any urgent febrile symptoms appeared. In most cases, however, the depression of strength was more immediate, with shivering, load and oppression about the præcordia, and total loss of appetite, headache, severe aching pains in the loins and limbs, especially in the larger joints; the skin became hot and dry, the pulse varying from 86 to 130, the tongue coated, clammy, or parched, or glazed with little fur, of a dusky red, yellowish, or brown; thirst, bad taste in the mouth, parched and heated condition of the fauces, the nights generally without sleep, or with disturbed slumbers, "in which the activity of the imagination so nearly equals the waking reverie, and there is so little actual repose, or feeling of refreshment on waking, that the individual is unconscious of having slept." In general there was no delirium, the bowels commonly disposed to constipation in the beginning, but generally continued free afterwards, with little more assistance than the saline mixture afforded.

This moderate fever proceeded in nearly two thirds of the patients to the end of the 2nd or 3rd week; a few were convalescent on the 7th, 8th, or 9th days, more about the 12th or 14th, and still more by the end of the 3rd week; some by the 4th, 5th, and 6th.

The pains in the limbs were the most constant

attendant upon this fever, and the subject of the loudest complaints, described sometimes as an aching in all the bones, as a soreness of the flesh, as if the person had been beaten; often said to be fixed in the large joints, as the knees and shoulders, and sometimes as a painful stiffness and immobility of the limbs.

Bateman could trace no connexion between the appearances of the tongue and any particular condition of the *primæ viæ*: the same state is seen with diarrhœa, constipation, or perfect regularity of evacuation, with total anorexia, and a relish for food. The more frequent connexion was, perhaps, that of the glazed, tumid, yellowish brown tongue with diarrhœa. Vomiting, and a disposition to diarrhœa, existed in some, not usually among the early symptoms, commonly occurring in the 2nd week or later; often only excited by the ingesta, and controlled by absorbents. They existed singly, but not unfrequently together, *the diarrhœa in about one eighth*: the vomiting less frequently.

From March 1st, 1817, to February 28th, 1818, 678 patients were admitted, of whom 79 *had diarrhœa*, and 51 vomiting; and out of 130 in which these symptoms occurred, they were combined in about one third; the vomiting being accompanied by pain and tenderness, on pressure, in the epigastrium in 25 cases, which sometimes existed without sickness. In 75 cases, or one ninth, a free spontaneous perspiration took place, generally in the night; and in 19 only did it appear critical; in 27, followed by a marked improvement: and in 29, without any relief whatever. Deafness occurred

in 65 cases, or about one tenth, and only in 2 who died. Relapses occurred in 54 instances, or nearly one twelfth.

The *more severe* form of Typhus was like that of the "*slow nervous fever* of Huxham, which differs from his '*putrid pestilential fever*' only in the less violence of its symptoms and more protracted course."

This form for the 1st week, or till the 12th day, exhibited the ordinary symptoms of that above described. The debility then became more considerable, the voice more feeble, the speech slower, the tongue dry, with a brown streak in its centre; pulse smaller, quicker, and sharper; eyes dull, countenance heavy, and the patient sunk into a more supine posture. This change was followed or accompanied by a more manifest disturbance of the sensorium, indicated by an increasing confusion, or wandering of the mind, approximating in many cases to stupor, with drowsiness; sometimes moaning, skin parched, but not hot; and in this state they remained 2 or 3 weeks, with difficulty restored, or sinking from exhaustion of the vital powers, without more malignant symptoms, and without subsultus, or stupor.

In a few cases the change on the 9th or 10th day was more formidable: the delirious rambling was more violent, especially during the night, attended with watchfulness, restlessness, picking the bed-clothes, a slight degree of subsultus of the muscles, tremor of the tongue, teeth and lips coated with a black tenacious mucus, which appeared to extend to the fauces and larynx, occasioning a short

husky cough, and a hoarse whisper of voice. The tongue also was coated with a thick, hard, brown fur, and became fissured, chapped and tender, and the mouth sore. The bowels were not unfrequently tolerably regular, or kept so by an occasional laxative; but in some cases a very troublesome diarrhoea came on, which occasionally was among the earliest of the symptoms; great debility attended it; pulse from 120 to 130; the evacuations thin and watery, generally of a light colour, of a faint offensive odour, occasional griping, but no tenesmus.

Petechiæ, which have always been of rare occurrence in the House of Recovery, were only observed in 9 out of the 678 cases, in 2 of which they were accompanied by extensive ecchymoses or vibices.

At various periods of the disease some of the important organs of the body became more particularly disturbed. In a few cases the fever assumed a phrenitic form, a character which it maintained throughout its shorter course, never degenerating into the slow nervous fever. The violent symptoms set in earlier, even the delirium commencing by the 4th or 5th day; the pain of the head more acute, with intolerance of light, and a staring appearance of the eye, the delirium more active, inciting to perpetual movements, and requiring, in some cases, the strait waistcoat; the pulse from 120 to 130, rather sharp; tongue sometimes only white and clammy, or clean and parched, and skin usually hot and dry. If the disease was not checked in time, the violent delirium and restlessness subsided into muttering and moaning, with occasional cries or screams, or a mere rolling of the head, and constant

jactitation of the limbs until the patient sunk. This variety of the fever occurred in a few young and stout subjects, and was more under the influence of remedies.

Pectoral disorder was observed in 144 cases, as slight catarrhal coughs, or attended by pains in the side and under the sternum, pleuritic stitches with short cough and impeded respiration. They were severe in those cases where the tongue was black, with delirium and subsultus. Cynanche laryngea occurred in 1 case; in 4 there was a considerable affection of the trachea, which in 2 amounted to croup. In 14 cases the tonsils and parotid glands were inflamed, especially in the latter stages of the fever.

The numerous instances of diarrhoea and vomiting were seldom accompanied by the evidence of an inflammatory condition: in 25 cases only was any soreness or tenderness on pressure in the epigastrium or hypochondria complained of, and in but 2 or 3, a similar affection of the peritoneum. There was no indication of hepatic congestion, unless in one case, where immediate relief ensued from a copious black evacuation, of a bloody appearance, from the bowels.

In the 2nd or 3rd week of the fever, the tendency to acute inflammatory action was most manifest, recurring in some cases once or twice in the same organ, or seizing some other part when subdued in the first, requiring bleeding, evacuants, and blisters.

Rheumatic pains and swellings, chiefly in the feet, sometimes in the hands and shoulders, attended with great soreness, occurred in 6 cases; and in 6

others an erythema, in large circumscribed patches on the chest, neck, shoulders, or hips, with restlessness, and aggravation of the febrile symptoms; and in 1 case a collection of pus formed in the hip.

In 5 cases large boils, or small abscesses, formed, in 3 of them near the anus, but *in 2 they assumed the character of carbuncle* on the extremities. In 5 cases erysipelas of the face and scalp occurred. In 6 or 7, sloughs took place on the sacrum or hips, and in the 2 patients in whom ecchymosis appeared, they occurred on all the points of extravasation.

Bateman remarks that this epidemic was a specimen of that mild Typhus which has "exclusively been observed for the last 30 years, and which differs only from the putrid pestilential fever of Sydenham and Huxham, by being stripped of its malignancy through the improvements in the arts of domestic life, and the public provisions for promoting the general health."

The mortality from March 1817 to February 1818, at the House of Recovery, was 50 out of 678 cases, about 1 in $13\frac{1}{2}$. Of the whole number, 145 were under 17 years of age, and of these 5 died, or 1 in 29. Of 63 whose age exceeded 50 years, 15 died, or 1 in $3\frac{1}{2}$.

Of the 678 cases, 124 were admitted before the 6th day, most of them not till the 5th: 324 on, or considerably later than, the 9th day: 168 of these last had been ill a fortnight and upwards; and 62 of them from 3 to 5 weeks. The average period of illness previous to admission was 11 days; the average time of residence in the hospital 15 days,

and the duration of the disease was 26 days. Of the 50 who died, 11 were brought in moribund.

The report of the morbid appearances is too vague to require notice; but I may mention that ulcerations of the small intestines are spoken of in 3 cases which occurred in former years; and Bateman inquires whether "such appearances in the internal lining membrane of the bowels may be produced after death by putrefaction, or by the action of their acrid contents."

The differences between this epidemic and the Typhus of Paris, as described by Louis, are apparent. Louis says that the mean age of those affected in Paris was 23 in those who died, and 21 in those who recovered; and out of 138 patients there were but 10, or 1 in 13½, whose maximum of age was from 30 to 39. Bateman says, in London, that out of 678 patients, 63, or nearly 1 in 11, were above 50 years of age. The diarrhoea, so early, frequent, and urgent a symptom in Paris, was comparatively rare and moderate in London, and only 1 case is alluded to where the stool was like blood. The phrenitic delirium was less frequent and less violent in London, the spasmodic affections seldom observed, and no mention is made of any permanent contractions of the limbs. Petechiæ were noticed only in 9 cases, or 1 in 75, and the mortality, which in Paris was as 1 in 3, in London was as 1 in 13½. From the frequency of Intermittents in Paris, from Typhus occurring chiefly in those who have recently removed into it from the country, and from the more severe and more fatal character of the disease, it would seem to be the

ultimate effect of the causes of fever, and attributable to the local atmosphere of the city, in those most predisposed to fever; and that to estimate fairly the proportionate mortality between the two cities, it would be necessary to include the Intermittents of Paris, a form of fever scarcely existing in London, and which may be said to be represented in it by the milder forms of Typhus. It is a very interesting subject of inquiry, whether these very mild cases of Typhus depend upon any affection of the glands of Peyer; and whether, from the less frequent and more moderate diarrhoea in the fever of London, this lesion is met with so constantly as in Paris. If it should be invariable in all fatal cases, but varying in degree, still a question would arise, whether it is always existent in the milder cases, or to be considered as the ultimate effect of the disordered action? Future investigations must determine these points; and if it should be found in the epidemic prevalence of Typhus in London, that, among cases, arising under similar circumstances, of different degrees of intensity, yet all referable to the same general disease, one or more, after death, should fail to exhibit an altered state of the glands of Peyer, the conclusion of Louis as to this lesion being essential to Typhus cannot be considered applicable to the disease of this country.

Bateman considers the epidemic of 1817 as analogous to the *slow nervous fever* of Huxham, and contends that the putrid pestilential fever of the same author, a more malignant modification, had not occurred to the observation of any practitioner for a space of 30 years. I shall quote Hux

ham's* account of this fever, and then recur again to the epidemic of 1817, as it appeared in Scotland and Ireland, to show that whatever might have been the general mildness of the disease, there were cases which in character were analogous to the worst forms of Typhus as described by Huxham.

This eminent man has so long been considered one of the first authorities in fever, that I shall not confine myself to the mere detail of the symptoms of the nervous and putrid fevers he has described, but with as much brevity as is consistent with perspicuity, offer a general view of his opinions of the nature and causes of the fevers he met with in his practice at Plymouth, and exemplify the order of their succession from the years 1728 to 1752 in which he records the progress of disease. He distinctly notices the common simple fever of Dr. Armstrong, and though he does not separate it from what the latter termed Specific fever, there is a remarkable agreement in some of their views and opinions.

He describes a simple fever, arising from violent exercise, cold, or stimulants, in which, if the blood, by its increased impetus, and by the dilatation of the vessels, be so agitated that some of the red globules are forced into the serous arteries, an inflammatory fever arises, varying according to the part inflamed. By bleeding *ad deliquium*, as Galen did, the blood's motion ceases for a time; its velocity and quantity, and the *vis motrix* are lessened: but the quantity drawn must be regulated by the

* *Huxhamii Opera*, edidit J. C. Huxham, A.M. R.S.S.: Londini 1778. 4to.

condition of the patient and the intensity of the symptoms. Nor is an oppressed pulse, he says, to deter the young practitioner, as this is often the consequence of too great fullness, as is proved by the pulse becoming more free and strong after venesection. "As increased velocity of the humours will excite fever, the violence of it will be in a compound ratio of strong tense fibres, much rich dense blood, and the acrid salts in it. The weaker and more lax the fibres, and the poorer the blood, the less violent is the fever, as in slow nervous fevers, which are generated by unwholesome diet, warm wet seasons, anxiety and dejection of mind: hence a kind of lentor, or ropiness of the humours, which is a proximate cause of the disease. It is not inflammatory, as it subsists chiefly in the serous lymphatic vessels which become obstructed; and from such a poor state of the blood few animal spirits are generated, and these are irregularly secreted and distributed, whence the nervous symptoms which denominate the fever, the seat of which seems to be chiefly in the lymphatic and serous arteries, and perhaps in the very origin of the nerves. As it is attended by too great a flaccidity and torpor of the nerves and fibres, the obstructions lying remote from the great road of the circulating blood, it is no wonder they are not easily affected by medicines.

"These two kinds of fever, the Inflammatory, and Slow nervous, seem to have opposite causes, symptoms, and effects; and the Intermittent is an intermediate febrile state; the common causes of which are a moist foggy atmosphere, exhaling from

a swampy soil, or a continuance of cold, rainy, thick weather; the fibres are relaxed, perspiration obstructed, whence a lentor of the blood, and a stagnation in the ultimate branches of the arteries: the blood recoils upon the heart; the powers of nature rise to remove the obstruction, which is carried off by the hot fit in sweats and turbid urine. If the lentor and obstructions are great, the fever runs high, and is often changed to an acute Continual fever. Some epidemic Agues at first put on the appearance of ardent fevers, and then break into Quotidians and Tertians; and it is not uncommon for these to be changed by a hot regimen into Inflammatory fever; and venesection and a cool purge will soon reduce them to their original type. But by far the greater number, especially in the autumn, are disposed to sink into low irregular Remittents, putrid, or Slow nervous fevers, and if you can change the last into a regular Intermittent, you soon cure your patient.

“The Influenza of the spring of 1743 often became pleuritic, or peripneumonic, and often after 2 or 3 days ran into a Quotidian or Tertian. These last, and the Semitertian, are sometimes rife and contemporary with epidemic Pleurisies and Peripneumonies, as in 1744, which, with inflammatory Rheumatism, reign very much in a cold dry spring, and Intermittents succeed in the following warmer months. Vernal Tertians are often very obstinate in wet rainy summers, and patients are apt to relapse. Improper evacuations, or unwholesome diet, render these agues anomalous and dangerous, and frequently make them degenerate into ma-

lignant, putrid, or Slow nervous fevers, especially when due perspiration is often interrupted by cold, damp air.

“A regular Tertian, then, is a *medium* between an Inflammatory and a Slow nervous fever; and on the one hand, the solids and fluids may be so highly wrought up as to fire the blood into a Continual inflammatory, or on the other, so depressed, as to bring on the Slow nervous fever.

“In this Slow nervous fever the patient is listless, feels slight chills, and shudders, with uncertain flushes of heat, weariness, heaviness, and dejection, a load, pain, or giddiness of head, nausea, and frequent urging to vomit. Though a kind of lucid interval of several hours sometimes intervenes, the symptoms return with aggravation, especially towards night, the head grows more heavy and giddy, the heat greater, pulse quicker, but weak, the breathing oppressive, with a great torpor, or dull pain and coldness in the back part of the head, commonly succeeded by some degree of delirium.

“In this condition the patient continues 5 or 6 days, restless, anxious, without, or unconscious of, sleep. The pulse all this time is quick, weak, unequal, sometimes fluttering, for a few minutes slow or intermitting, then, with a sudden flush in the face, very quick, and soon after calm and equal. The heats and chills are as uncertain and unequal; sometimes a sudden colour and glow in the cheek, while the tip of the nose and ears is cold, and the forehead in a cold dewy sweat, and it is common for a high colour and heat to appear in the face when the extremities are quite cold. The urine is

pale and limpid; or with a loose bran-like matter in it. The tongue is at first covered with a thin whitish mucus, often very dry, red, and chapped at the close, yet the patient seldom complains of thirst. About the 7th or 8th day, the giddiness, pain, or heaviness of head become greater, with *tinnitus aurium*, and often with delirium. The load at the præcordia, the anxiety, faintness, grow more urgent, and the patient often falls into deliquium on sitting up: coldish sweats suddenly come on the forehead and backs of the hand, and as suddenly go off. If the urine grows more pale and limpid, delirium, with tremors and subsultus, may be expected; but the delirium is seldom violent, rather a confusion of thought and action, the patient muttering and faltering in his speech, sometimes only waking in a hurry and confusion, and presently recollecting himself, but falling into a muttering, dozing state again; and the tongue trembles much when put out. Profuse sweats often break out on the 9th, 10th, or 12th day, commonly coldish and clammy on the extremities, with very thin stools; or frequently a warm moisture and gentle diarrhoea carries off the delirium and comatose state; or nature now sinks apace; the extremities grow cold, the nails turn pale and livid, the pulse trembles and flutters, so weak and quick as scarce to be distinguished, sometimes slow and intermitting: the patient becomes insensible, stupid, not affected by noise and light. The delirium ends in profound coma, the stools and urine pass involuntarily, the tremors and twitchings are preludes to a general convulsion, which at once snaps the thread of life, after 14, 18, or 20 days, or longer.

"It is *pestilential* when accompanied by black aphthæ, dark-coloured, livid, black petechiæ, and vi-
bices, and *generally contagious* when attended with
pustules, papulæ, spots on the skin; and when these
exanthemata are of a bad kind, it is a *malignant* fe-
ver. Sometimes a parotid appears and is salutary."

These observations of Huxham prove his having
frequently observed the change in the types of
fever at Plymouth; and his description of the Slow
nervous fever itself, shows in several respects its
affinity to the periodical type, independent of its
occasionally arising out of, and passing into it. If
compared with the description of Bateman, it will
be seen that the fever of Plymouth (where, in 1734
and 1735, years remarkable for their wetness,
"*lentæ et nervosæ febres, ac Remittentes et Inter-
mittentes fuere frequentissimæ,*") partook more in
its continued form of the nature of the periodical,
in the sudden transitions of the heat and cold, the
rise and fall of the pulse, and the appearance and
disappearance of the sweats, than the epidemic fever
of London, in 1817, where Intermittents were not
contemporaneous with it. The *lensor* of Huxham
plays a most important part, in his estimation, in
influencing the phænomena of fever. He makes it
depend on the viscosity of the blood, and the type
of the fever to depend on the strength of the
patient. In an Intermittent, the original cause is
this viscosity, which, from an obstruction of the
capillaries, gives rise to a rigor: the subsequent
excitement, if the strength be entire, comminates
the viscid humours, and sweat gives relief to the
symptoms. If the impetus, however, of the blood

in the excitement be great, so high a heat arises from the attrition of the blood, that a continued ardent fever is excited, with inflammation; but if the strength be feeble, the impetus is feeble, and the capillaries more and more obstructed, whence those who die of Intermittents perish in the cold stage; and hence it is intelligible why fevers so often change their type, and why protracted ones eventually assume the character of Slow nervous fevers, from the diminished elasticity of the fibres, and the increasing viscosity of the humours. "Nothing," he says, "is more beneficial in the Slow nervous fever than eliciting gentle sweats, as by their means the fever is soon discussed or changed into a Remittent and Intermittent."

After his directions for the use of diaphoretics, he recommends, towards the end, "an occasional dose of rhubarb, to carry off the colluvies in the first passages, which makes the remissions or intermissions that frequently happen in the decline of nervous fevers more distinct and manifest, and gives a fairer opportunity for bark, which at this time I generally give out of saline draughts, with salt of wormwood and the juice of lemons."

These theoretical notions of Huxham are valuable so far as they prove the frequency of the change of type in the fevers of his neighbourhood, and his treatment was adapted accordingly.

"The highly putrid, malignant, and even petechial fevers many times arise from mere antecedent acrimony of the blood; yet generally the pestilential and petechial have their origin from contagion.

"These attack with much more violence than the

Slow nervous. The rigors, if any, are greater, the heats sharper and permanent, yet at first sudden, transient, and remittent, the pulse more tense and hard, commonly quick and small, sometimes slow, seemingly regular for a time, then fluttering and unequal; the headache, giddiness, nausea, and vomiting more considerable from the beginning. A severe fixed pain is felt in the temples, over the brows, or bottom of the orbits; the eyes very full, heavy, yellowish, and often inflamed; the countenance bloated, with throbbing of the temporal arteries, and troublesome *tinnitus aurium*. The prostration of spirits, weakness and faintness often very sudden and great, even sometimes when the pulse seems tolerably strong; the respiration commonly laborious, with sighing or sobbing, and the breath hot and offensive. Few cases occur without pain in the back and loins, and an universal weariness, or soreness, and pain in the limbs, with sometimes a great heat, load, and pain at the pit of the stomach, and a perpetual vomiting of nauseous porraceous, or black choler, and troublesome singultus. The tongue, white at first, grows dark and dry, sometimes of a shining livid colour, exceedingly black, dry, and stiff at the height. The thirst is commonly great, sometimes not complained of, which indicates phrenzy, or coma; and the lips and teeth are eventually furred with a black tenacious sordes. The urine, at first crude and pale, grows high-coloured and offensive, sometimes black and foetid, with a sooty sediment. The stools, near the height or decline, intolerably offensive, green, livid, black, with severe gripes and blood.

“ When black, livid, dun, or greenish spots

appear, the malignity is indubitable, and the large and black ones are almost always attended with profuse hæmorrhagies, and cold clammy sweats. Petechiæ sometimes appear on the 4th or 5th day, or not till the 11th, or later; vibices seldom till the fatal period. An efflorescence, like the measles, but of a more dull and lurid hue, is often met with. On the 11th or 14th day the petechiæ sometimes disappear on the coming on of profuse sweats, and white miliary pustules break out. An itching, smarting, red rash relieves the patient, and so do large watery fretting bladders, which many times rise up on the back, breast, and shoulders. A scabby eruption about the lips and nose is salutary, especially the more hot and angry it is. Dark-coloured or white aphthæ are dangerous, and soon followed by great difficulty of swallowing, ulceration of the fauces, œsophagus, incessant singultus, a bloody dysentery, black sanious, horribly foetid, and infectious stools.

“The bilious principle is too greatly predominant in all putrid, malignant and petechial fevers. If the bile be not carried off, it causes anxiety, sickness at stomach, and pain; and an amazing change for the better sometimes succeeds a vomit or a stool, where inexpressible anxiety, a load on the præcordia, sickness, and singultus had preceded. Though diarrhœa is often critical and salutary in the height or decline, it is prejudicial at the beginning, if thin and profuse, and nothing shows it to be more certainly useful than when a gentle sweat, or warm moisture of the skin, accompanies it. The great effort of nature to discharge the morbid matter is through the skin, and I never saw one

carried off till sweat issued; but if profuse, cold, clammy, and partial, there is more to fear than hope from it." He speaks of a preparation of bark, which he used not only in Intermittents, but in Slow nervous fevers, and also in the putrid, pestilential, and petechial, especially in the decline, though the remissions were very obscure, and yet with very good effect.

Huxham does not exclusively attribute these pestilential fevers to contagion, as he admits that they sometimes arise "from mere acrimony of the fluids, though generally from contagion;" and he agrees with Sydenham in the idea that "the causes of all epidemic diseases are depraved constitutions of the atmosphere." "If the temperature of different climates be productive of different diseases, why," he asks, "are not the seasons of the same country productive of different affections? They, in fact, are so, for inflammatory fevers prevail in spring, and Slow nervous ones, &c., in autumn, and the diseases of a moist, tepid constitution of atmosphere are different from those of a cold, dry one." "*Rarissime vides graves et pestilentes febres fieri valde epidemicas, si non post eximiam aliquam atmosphære qualitatem, diu perstantem. Haud raro herclè notavi, post procellas gravesque pluvias, febres epidemicas multum fuisse imminutas, et vi et numero. Ideo forte divus Augustus, cum in Galliâ moraretur, Templum et vovit et fecit Circio, vento vehementissimo: eique Turbini, etsi ædificia sæpe diruenti, gratias publicas agebat gens Gallica olim, referente Seneca; utpote cui salubritatem cœli sui deberet.*"

I shall notice the progress of fever at Plymouth

in several of the years in which it is detailed by Huxham, to show that Intermittents, the Slow nervous, and the petechial succeed each other from spring to autumn; and that the pestilential, like the pernicious fevers of Italy, are the aggravated effect of peculiar epidemic seasons.

In 1728, Tertians and Semitertians are mentioned in March to have been more frequent than common; and in April they were liable from any error to become putrid fevers. In June Intermittents, and in July Tertians and double Tertians, were associated with putrid, Slow nervous fevers. In August Intermittents were more frequent. In September, they prevailed with some putrid fevers. In October the fevers were petechial, and the two following months were free of fever; nor are they mentioned again till June 1729, when Intermittents, especially Remittents, and Slow nervous fevers, prevailed. In July the Slow putrid fever "becoming remittent, and at length intermittent towards its decline," was epidemic; in October it is said to have nearly disappeared; and no mention is made of it nor of Intermittents till April, 1730, when Nervous, Remittents and Intermittents, with slight delirium, were frequent. In May the two last, "*lævi ex errore in Continuas malignas nervosas transibant haud infrequenter.*" In 1731 Intermittents occurred in July, followed by a red Miliary fever in August and September. In 1732 the only mention of fever is the existence of Intermittents "*passim*" in August; and in 1733, a year in which Influenza prevailed universally in February and March, Intermittents are mentioned in May, associated with Remittents in June, and both appear to have passed

away after July. In 1734 Intermittents prevailed from April to July; in August, "omnia loca nunc aquâ et limo plena sunt;" they were displaced by Nervous fevers, which in September were associated with Miliary and Intermittent fevers. In October the Nervous and Miliary existed alone: no mention is made of them in November, but in December they gave way to putrid petechial fevers. In January, 1735, Miliary fevers "passim:" in February a contagious fever, attended with pustules and petechiæ, prevailed "classe, ut credere par est, advecta: quippe quæ diu ante inter nautas apud *portum magnum* commorantes sævierat." In March it raged extensively among the common people, declined in June as Intermittents arose, and in Plymouth was much diminished in July, though it prevailed extensively in the neighbourhood. It disappeared in August, was succeeded by petechial fevers in September, by Intermittents and Slow fevers in October, Slow nervous in November, and Putrid nervous in December; and no fevers are spoken of again till June, 1736, when Intermittents arose, associated with Miliary fever in July, which became malignant in August, especially in Cornwall. In September Slow nervous fevers, often with parotids and profuse sweats, prevailed, particularly in South Devon and Cornwall, and they disappeared in Plymouth after October.

That the succession of fever, however, may be more easily seen, and one year compared with another, I will reduce the observations of Huxham to a tabular form.

	1728.	1729.	1730.
<i>Jan.</i>			
<i>Feb.</i>			
<i>Mar.</i>	Intermittents.		
<i>Apr.</i>	Intermittents passing into Putrid fevers.		Nervous, Remittents, Intermittents.
<i>May</i>	Intermittents.		Intermittents, Remittents, passing into Continued malignant and nervous fevers.
<i>June</i>	Intermittents, Putrid, Slow nervous.	Intermittents, Remittents, Slow nervous.	Febres <i>exiguæ</i> ; almost gone. Slow fevers.
<i>July</i>	Intermittents, few Putrid.	Slow nervous, ending in Remittent and Intermittent.	
<i>Aug.</i>	Intermittents.	Still prevailing.	
<i>Sept.</i>	Intermittents, some Putrid.	More rare.	
<i>Oct.</i>	Petechial.	Almost gone.	
<i>Nov.</i>			Putrid Synochus.
<i>Dec.</i>			Slow nervous in neighbourhood; rare in town.

	1731.	1732.	1733.
<i>Jan.</i>			
<i>Feb.</i>			
<i>Mar.</i>			
<i>Apr.</i>			
<i>May</i>			Intermittents.
<i>June</i>		Miliary fevers.	Remittents, Intermittents.
<i>July</i>	Intermittents, especially in the country.		Intermittents.
<i>Aug.</i>	Red Miliary fever.	Intermittents.	
<i>Sept.</i>	Red Miliary, with bad symptoms.		
<i>Oct.</i>			
<i>Nov.</i>			
<i>Dec.</i>			

	1734.	1735.	1736.
<i>Jan.</i>			
<i>Feb.</i>		Contagious fever, with petechiæ.	
<i>Mar.</i>		Ditto, epidemic among the common people.	
<i>Apr.</i>	Intermittents.	Ditto, more prevalent, with black petechiæ and livid vibices.	
<i>May</i>	Intermittents.	Ditto, still raging.	
<i>June</i>	Intermittents.	Ditto, less prevalent at the end of the month.	Intermittents.
<i>July</i>	Intermittents.	Ditto, more prevalent in the neighbourhood.	Intermittents, Miliary.
<i>Aug.</i>	Slow nervous fever.	Relics of the Contagious fever.	Malignant, Miliary, especially in Cornwall.
<i>Sept.</i>	Nervous, Miliary, Intermittents.	Petechial fever.	Slow nervous, with parotida, especially in South Devon and Cornwall.
<i>Oct.</i>	Nervous, Miliary.	Slow fevers, Intermittents.	Slow nervous and Miliary.
<i>Nov.</i>		Slow nervous.	
<i>Dec.</i>	Putrid petechial.	Putrid nervous.	

	1737.	1738.	1739.
<i>Jan.</i>		Slow nervous.	
<i>Feb.</i>			
<i>Mar.</i>			
<i>Apr.</i>			Intermittents.
<i>May</i>	Miliary.	Intermittents.	Miliary.
<i>June</i>			Miliary.
<i>July</i>	Miliary.		
<i>Aug.</i>	Slow nervous, Miliary.	Putrid fevers.	
<i>Sept.</i>	Intermittents.		Slow nervous and Miliary, some Putrid, others Intermittent.
<i>Oct.</i>		Slow nervous.	Putrid fevers, Intermittent, Remittent.
<i>Nov.</i>		Slow fevers.	Nervous and Miliary.
<i>Dec.</i>		Slow nervous.	Miliary and Nervous. (Intense frost.)

	1740.	1741.	1742.
<i>Jan.</i>	Slow nervous, Miliary. (Great cold.)	Petechial fever.	
<i>Feb.</i>		Malignant fever.	
<i>Mar.</i>		Malignant fever.	
<i>Apr.</i>	Petechiæ common in Peripneumonia.	The Putrid Petechial in South Devon.	Intermittents. — Contagious fever in Cornwall.
<i>May</i>	Petechial Peripneumo- nia; Putrid Petechial fever.	Intermittents; Slow nervous; more pete- chial.	
<i>June</i>	Petechial, Pneumonic, and Pestilential fever.	Malignant fever less.	Putrid fever.
<i>July</i>	Pestilential fever, with parotids, buboes and furunculi.	Putrid fevers.	Putrid fever.
<i>Aug.</i>	Ditto, still prevailing.	Putrid fevers.	Intermittents.
<i>Sept.</i>	Ditto, less prevalent and not so severe.	Synochæ. — Anomalous Intermit- tents.	Putrid fever.
<i>Oct.</i>	Slow nervous frequent. Some Malignant.	Putrid fevers.	
<i>Nov.</i>	Malignant, Slow and Miliary.	Slow nervous.	
<i>Dec.</i>	Petechial fevers.		Slow putrid fevers.

	1743.	1744.	1745.
<i>Jan.</i>	Slow fevers.		Malignant Catarrhal fever, with petechiæ and gangrene of feet.
<i>Feb.</i>	Intermittents.		Ditto, still prevailing.
<i>Mar.</i>	Intermittents.	Intermittents.	Ditto, still prevailing.
<i>Apr.</i>	Putrid with miliary eruption.	Intermittents.	Ditto, still fatal. Intermittents.
<i>May</i>	Intermittents.	Intermittents.	Ditto, still fatal.
<i>June</i>	Putrid fevers; Intermittents.	Intermittents.	Intermittents, Putrid Petechial fever.
<i>July</i>	Intermittents. — Putrid fever.		Intermittents, Putrid Malignant fever.
<i>Aug.</i>	Intermittents in the country.	Intermittents.	Malignant fever.
<i>Sept.</i>			Malignant fever.
<i>Oct.</i>		Putrid fevers.	Slow nervous fever.
<i>Nov.</i>		Intermittents.	
<i>Dec.</i>		Malignant Catarrhal fever, with petechiæ, parotids.	Putrid fever.

	1746.	1747.	1748.
<i>Jan.</i>	Putrid nervous fever, Petechial Peripneu- mony.		
<i>Feb.</i>	Petechial Peripneu- mony.	Putrid nervous fevers.	
<i>Mar.</i>	Ditto, still existing.		
<i>Apr.</i>	Ditto, still existing.	Putrid Slow fever.	Putrid fevers. — Intermittents, in the country chiefly.
<i>May</i>	Bilious fever.	Putrid Slow fever.	Putrid fevers. — Scarce any Intermittents.
<i>June</i>		Putrid Slow fever.	Putrid and Slow fevers.
<i>July</i>		Putrid Slow fever.	Putrid and Slow fevers.
<i>Aug.</i>			
<i>Sept.</i>		Putrid Slow fever.	
<i>Oct.</i>		Putrid fever.	
<i>Nov.</i>			Putrid and Slow fevers.
<i>Dec.</i>			

	1749.	1750.	1751.
<i>Jan.</i>	Very few fevers.		Putrid Slow fevers in Devonshire.
<i>Feb.</i>			
<i>Mar.</i>	Very few fevers.		
<i>Apr.</i>		Slow nervous fevers.	Intermittents.
<i>May</i>		Putrid Catarrhal fever.	
<i>June</i>		Miliary fever at Totnes.	
<i>July</i>		Putrid fever with exanthemata.	Miliary, Putrid Slow fevers, especially on the east and south coasts of Devon.
<i>Aug.</i>		Putrid fever with a scarlet rash.	
<i>Sept.</i>			Putrid fevers.
<i>Oct.</i>			
<i>Nov.</i>			
<i>Dec.</i>		Putrid Slow fevers in Devonshire.	

In the 25 years comprised in the above Table, Intermittents occurred in 19, and Continued fever in 23 years.*

Intermittents absent for	6 years.
_____ occurred in 1 month only in 6 _____	
_____ 2 months _____	5 _____
_____ 3 _____	4 _____
_____ 4 _____	0 _____
_____ 5 _____	1 year.
_____ 6 _____	2 years.
_____ 7 _____	1 year.
_____ 10 _____	0 _____
_____ 11 _____	0 _____

Continued fever absent for 2 years.

_____ in 1 month in 2 _____	
_____ 2 months _____	2 _____
_____ 3 _____	2 _____
_____ 4 _____	4 _____
_____ 5 _____	6 _____
_____ 6 _____	2 _____
_____ 7 _____	1 year.
_____ 10 _____	1 _____
_____ 11 _____	3 years.

In the 25 years, comprising of course the same number of each month, the two types of fever are mentioned as follow :

In February	Intermittents once ;	Continued fever 5 times.
March ..	3 times ;	5 _____
April ..	9 _____	11 _____
May....	9 _____	11 _____
June....	9 _____	13 _____
July....	7 _____	14 _____
August..	5 _____	12 _____
September	5 _____	13 _____
October	twice ;	12 _____
November	once ;	7 _____
December		10 _____
January		8 _____

* In 1752 Putrid Slow fevers and Remittents occurred in August,—the only notice of fever that year.

They began in different years :

In February..	Intermittents once ;	Continued fever twice.
March	_____ twice ;	_____
April	_____ 6 times ;	_____ 6 times.
May	_____ 3 times ;	_____ twice.
June	_____ twice ;	_____ 3 times.
July	_____ once ;	_____ 3 times.
August	_____ once ;	_____ 6 times.
September	_____ once ;	_____ twice.
October ..	_____ once ;	_____ twice.
November..	_____	_____ twice.
December..	_____	_____ 5 times.
January ..	_____	_____ twice.

These Tables show the predominance of Continued fever over the Periodical; that while the last is most prevalent from April to September, the hottest season of the year,—scarcely existing from the end of October to the beginning of March, and never in December and January,—Continued fever is rife from April to October, but existing from November to January as frequently as Intermittents do from April to June, and much more extensively in February and March than the periodical type of fever. We have the express authority of Huxham for the fact, that, in the months in which Intermittents are most prevalent, they frequently pass into Continued fever; and that the last often ends in a Remittent and Intermittent. I have already mentioned that, from his description, the Slow nervous fever has more analogies with the periodical than the fever described by Bateman in 1817, where the last type was not even associated with it: and to prove still more strongly the affinity between these different types, as if arising from similar causes, and being modifications of their effects, depending on variations

of intensity or concentration of cause, of individual predisposition, and, perhaps, of the mean temperature of different years, we have the fact that when Intermittents disappear it is to give place to Continued fever, which in its turn declines as Intermittents reappear.

Intermittents prevailed more or less from March 1728 to September 1734, a period of $6\frac{1}{2}$ years. On their decline, they did not occur again for 20 months, excepting once; and from December 1734 to September 1735, the place usually occupied by them and the milder forms of Continued fever was usurped by what Huxham calls a Contagious Petechial fever, which began in December 1734; disappeared in January 1735; prevailed extensively from February to September; was succeeded in October by Slow nervous fever and Intermittents, the former continuing through November and December, from which period no fever is mentioned for 5 months, viz. till June 1736, when Intermittents again arose.

The question which naturally occurs to the mind on these occasions of the substitution, through nearly a whole year, of an unusual fever for those of ordinary occurrence, is, why contagion, to which the new disease is ascribed, and the operation of which it is admitted is limited to the near vicinity of the sick, and to fomites connected with them, should appear to banish the causes of the common fever? why, in fact, it should appear to prevent the operation of malaria to which Intermittents owe their origin? for it may be supposed that this effluvium does arise from the earth; and yet it does not manifest

itself till October, after the force of the new fever is entirely broken, till, in fact, it has disappeared, and the milder forms of fever, viz. the Intermittents and the Slow nervous, have resumed their wonted station. The seeming anomaly is explained on the supposition, that the new fever is but an aggravation of the old ones, arising from the same remote causes, but modified in intensity by those inscrutable states of atmosphere which favour the epidemic prevalence of fever, and perhaps by a highly favourable state of individual predisposition to disease, from the previous 3 or 4 years being unusually exempt from severe fevers. That this supposition is not unreasonable would seem from two facts; the gradual deepening of the epidemic effects, and the great analogy which the new disease bears to the worst forms of the old one. If we go back to April 1734, we find, after 3 preceding years of unusual exemption from fever, that the slight traces of an epidemic commence. For 39 months there had been a few Intermittents, Remittents, and Miliary fevers only, not a single case being recorded of any more formidable kind: but in April 1734, fever arises, and continues for 20 months with two exceptions, and it deepens gradually in intensity till, towards the decline of the epidemic, it ends almost as mildly as it began. From April to July 1734, Intermittents reign alone; they are followed by Nervous fever, as the next highest grade, through August, September, and October: in November there is a pause, but in December a Putrid Petechial fever arises, which is checked by the cold of January 1735. In February a contagious Petechial fever

sets in, and rages till September, when it melts into Nervous fever and Intermittents, the former of which lasts through November, and assumes a putrid form in December; and then follow Intermittents, after 5 months' interval; and, in fact, 3 years and 8 months succeed, in which all the fevers are mild.

The date of the new disease, ascribed to contagion, may be fixed in December 1734, a period at which the Plague of London in 1666 commenced. Like the Plague, this contagious fever was checked by the cold of January, to break forth as the temperature rose, and both raged till autumn was far advanced, and ended in forms of disease that were common in their respective periods. This uniformity of rise, height, and decline, certainly shows that accidental foreign contagion obeys very formally the influences which preside over common fevers, and that it steps in to act its part just as a fit nidus is prepared for it; and that it wears the livery of the diseases whose place it has usurped; so that it is very difficult to distinguish by any immutable characteristics the new disease from the old ones.

That contagion actually has anything to do with the new form of disease is uniformly admitted to be very questionable; and if it has none, it appears to me that it is not concerned in the diffusion of the evil, for independent of the fact that *many* sicken during an epidemic on whom contagion could not have operated, the epidemic influence is concentrated in particular districts, and all within its reach require but ordinary disturbing causes,

such as fatigue, watchfulness, anxiety, and distress, &c., to produce disease.

The epidemic of 1740 and 1741 will tend, I think, to support these views of the indigenous origin of the malignant fevers of Plymouth; for it arose apparently at the same period of the year, in three different parts of the country, in three successive years, as if it obeyed some general law, wholly inconsistent with the chance-medley of a wandering contagious principle.

After $2\frac{1}{2}$ years of the occasional visitations of the milder forms of fever, interrupted by the interval of several months, this epidemic may be said to have commenced in September 1739, for from this period till November 1741 fever of a very formidable kind prevailed, with the exception of 2 months succeeding an intense frost. It began in September and October 1739 with Intermittents, Remittents, Miliary, and Nervous fevers; and these last prevailed to a certain extent till January 1741; and what showed the strong tendency to the prevalence of fever, was its occasional occurrence, notwithstanding a frost in October and November, which in December became intense: "*brevi omnia penetrabile frigus adurit intus atque foras, vel generosissima vina congelans: quicquid aeri expositum est, dicto citius, congelat; ad ignes luculentos rigentes, etiam in lectulis algidi, adeo ob frigus horrendum torpemus, ut vix fere simus vitales.*" In January 1740, "*adeo sævum regnabat frigus, ut vina omnigena, foras exposita, mox congelarentur, imo ac vel ipsum ad littora mare, quod utique hic accidit rariissime:*" in February "*mare sæpius con-*

gelatum fuit." March and April were also cold, with occasional frosts, and the snow remained on the hills till the 26th of the latter month.

In this instance of an epidemic commencing in autumn, we have an example of cold failing to arrest it, as in the case where the disease begins in the spring, rises to its height in the summer and autumn, and declines on the approach of cold weather. The Nervous fever prevailed in some instances in December 1739, and January 1740, but ceased when the intense cold had become fixed; and the form which the epidemic took in April was that of a Petechial Peripneumony, which in May and June became associated with a putrid Petechial fever. This in July was accompanied with parotids, buboes, and furunculi; declined in September; was associated with the Slow nervous fever in October and November; rose again and prevailed alone from that time till March 1741; and fever, either Petechial, Slow nervous, Malignant, Putrid, Intermittents regular and anomalous, did not cease till November 1741.

It is remarkable that in April 1741 and 1742, a fever similar to that which began at Plymouth in April 1740 appeared first in South Devon and then in Cornwall. Huxham attributes the fever in Devonshire, in April 1741, to the contagion carried thither by some sailors who had had the disease in Plymouth. "*Sedulo inquirens hæc (febres putridæ, sæpe cum eruptione miliari, sæpe cum petechiis) plerumque esse propagines febris nauticæ contagiosæ invenio, ea nempe loca adeunte uno alterove nautâ convalescente.*" But the fever in Cornwall

in April 1742, which he describes as a "*febris putrida contagiosa ac pestifera valde*," with black petechiæ and livid pustules, he does not ascribe to any contagious origin, either from the Plymouth or the Devonshire fever, but says, "*genita hæc in Carceribus febris et per comitia provincialia longe lateque, plurimos letho dedit.*"

The Plymouth epidemic, however, he attributes to imported contagion. Under the date of June 1740 he says, "*Ineunte vere ad hunc portum impulsæ sunt naves duæ quarum posterior mox à mari Mediterraneo : ex his, ægroti plus quam ducenti ad terram protinus delati sunt, horumque pars major febre maligna, imo pestilente laboravit.*"

This is very definite; but the inference that the fever at Plymouth arose out of this imported contagion is merely conjectural. Mead had asserted that the English Plague always, somehow or other, came from Africa; and as the fever at Plymouth was an approximation to Plague, Huxham suspects that it came from the same continent, for he adds to the above passage, "*hinc in vulgum quoque sparsa maximam edidit stragem. Nec vana forsân fuit suspicio has quidem naves, pestilentîâ quâdam per Africas oras, tunc longe lateque grassante, attactas fuisse, quoniam has inter et illas frequens fuerat commercium.*" I have said that the first traces of the epidemic may, on an inspection of the Table, be discovered in September 1739; and the spring succeeding to a winter of intense cold, gave rise to a Petechial Peripneumony, such as frequently occurs in the malarious districts of the southern parts of America.

In April Huxham says that Petechiæ appeared in most acute diseases, even in Peripneumonia, especially among the sailors. In May, Pulmonary fevers raged of a very malignant kind, with black livid spots, severe pains in the head and back, and oppression of the præcordia, phremitis, pustules, and furunculi, which were fatal in a very few days. A putrid Petechial fever also prevailed among the sailors and the common people, and the two diseases seemed to unite in some instances, forming a complication of the Pulmonary and the Petechial fever. In July, "parotides, bubones, furunculi admodum dolentes, haud raro nonnum inter morbi diem et decimum quartum erumpunt: salutaria hæc plerumque, maxime si probe suppurant, pessima utique si mox recedunt." In August, petechiæ were more rarely observed; and the disease was often protracted to the 21st day. In September, the fever was lessened in violence and in frequency. In October Slow nervous fevers were frequent, with remains of the malignant fever, which continued under one form or another till November 1741, with a momentary rise of Intermittents in May and September 1741, the only mention made of them for 18 preceding months. So that a season of unusual severity was attended with a corresponding aggravation of the usual forms of fever, an effect produced in several other parts of England and Ireland; for I find a mention of general sickness existing over a large part of Ireland, and allusions to it in London and Bristol, later in its full development than the fever of Plymouth, at least in Ireland,

judging from the account given by Harty *, in his comparison of the epidemics of 1741 and 1817.

Another epidemic, under the form of a Petechial Catarrhal fever, arose in December 1744, after an unusual prevalence of Intermittents, and it lasted till May 1746. It first appeared among the French and Spanish prisoners, and was said to be contagious, though the attendants might surely be supposed to sicken from the same causes as first operated on those who were the original victims; for the origin of the disease is not said to have been any imported contagion. Huxham candidly confesses, in June 1745, that he could not say whether it was propagated by contagion or not. He says, "*Maxime sæviit hic morbus inter captivos, nautas atque nostros, multos etiam jam per viciniam attigit. An ex contagione, an ab ipsâ atmosphæræ constitutione haud certe scio: parum namque contagiosus videtur nisi in ipsis nosoconiis: magna utique est, undique virium ac animi dejectio apud omnes, etiamque sanos.*"

In January it was attended frequently with gangrene of the feet.

I shall close with Huxham, by remarking that from 1746 to 1752, a period of 6 years, Intermittents are only spoken of 3 times, viz. in April and May 1748, and in April 1751; an exemption which contrasts very strongly with the earlier years of his observations. In 1747, Typhus prevailed alone from February to October.

I shall now return to the epidemic of 1817, to

* Historic Sketch of the Contagious Fever in Ireland, 1817, by W. Harty, M.B. Dublin 1820.

show that its origin in Ireland is admitted generally to have been spontaneous. The Scotch attributed their fever to Irish contagion ; and Barker, unwilling to accuse Ireland of the origin of the disease, attributes it to the Peninsular war, which had generated a new contagion more active than that of the ordinary Typhus of Ireland.

That the epidemic broke out spontaneously, however, in many places, wholly independent of contagion, is proved by the testimony of many of the Irish physicians, as reported in Dr. Harty's valuable "Historic Sketch" of the Fever : and though in Scotland, and perhaps generally in England, its rise was attributed to contagion, of a native or foreign growth, there are a few facts within the limits of my reading which prove that, occasionally at least, it was not attributed to such a source. I shall briefly refer to these, and then offer a tabular view of the epidemic to illustrate some important facts connected with it.

I have already quoted Bateman's admission of the fever often arising in London spontaneously. Dr. Edmondston, (*Edinb. Med. and Surg. Journ.*, vol. xiv. p. 71,) in speaking of fever at Newcastle, says that, for 10 years, ending in 1816, the annual admissions into the Fever Hospital were on an average about 8. In the year ending May 1817 they were 22 ; and from May 28th to November 1817 they amounted to 92, of which 36 were admitted in July.

Average of ten years to 1816	8
May 1816 to May 1817	22
1817, May 28, ...	1
— June 28, ...	1

1817, July	36
— August	17
— September	15
— October	13
— November	10

The greatest prevalence of the epidemic did not exceed 6 weeks, and it was preceded by a very great and abrupt change of temperature; for on June 18 the thermometer rose to 80°, and soon after, fever began to show itself to an unusual extent, though it had existed above the common average during the winter and spring. There were a few families in which 2 or 3 members were taken ill, but the invasion of the disorder in them was generally simultaneous. An indisposition, varying from 2 to 4 weeks, was frequent in many persons before they took to bed. The febrile state varied from 5 or 6 days to 4 or 5 weeks, commonly from 1 to 3 weeks; an apparent crisis occurred on the 14th or 16th day, generally followed by a relapse. The convalescence was often lingering and irregular, and “it might be questioned whether it was really such, or whether the alteration arose from the remittent form, which the disease seemed inclined to assume, especially in children.”

In speaking of the fever in 1822, Dr. Edmondston says, “it broke out somewhat simultaneously in the town and neighbourhood, in the most opposite and detached points, and I have not met with anything to satisfy me that contagion forms a distinguishing ingredient in this fever.” (*Edinb. Med. and Surg. Journal*, vol. xix. p. 226.)

At Leeds, Dr. Hunter shows (*Edinb. Med. and Surg. Journal*, vol. xv. p. 234. and vol. xvi. p. 313.) that fever increased in amount from 1815.

The average admissions into the House of Recovery for 10 years (1805 to 1814) were 81, but from 1815 to 1819 they averaged 196. They varied in the first period from 32 in 1806 to 137 in 1813, and in the last from 121 in 1816 to 303 in 1818.

At Witney, in Oxfordshire, Mr. Sheppard observed the increase of fever in July 1818, and he admits its spontaneous origin in the crowded, filthy habitations of the poor; that it often became recurrent; and that this change was evidently followed by the rapid decline of fever. Out of 146 cases only 4 were fatal. (*Edinb. Med. and Surg. Journal*, vol. xv. p. 344.)

In Glasgow the admissions into the Royal Infirmary (*Graham, Pract. Obs. on Continued Fever*, Glasgow 1818,) on the average of 12 years, from 1803 to 1814, were 63. They rose in 1815 to 230, in 1816 to 399, in 1817 to 714, and in the first quarter of 1818 they were 305. In 1812 they were only 16; many cases were mild, mere languor, debility, headache, tedious, often passing into regular fever, in the 2nd or 3rd week. In one case, of a plethoric young man, there was violent delirium, with inflamed staring eyes, contracted pupil, hard, thready, rapid pulse, cold extremities, and gangrene of the toes. Petechiæ, large vibices, degenerating into gangrene, buboes, and external abscesses, parotids, loss of the toes, and even of a part of the legs from gangrene, are mentioned

among the symptoms ; and some cases are alluded to, the colour and symptoms of which might warrant him, he says, calling the disease Yellow fever. The disease was confined for months to the low dirty parts of Glasgow, and the author admits that it may be engendered in crowded unventilated habitations, though the chief source of its diffusion is contagion. He speaks of its having been carried by contagion to the Grass-market of Edinburgh, though it did not extend to the airy and clean streets of Glasgow.

Kerr, in his "Brief Memoir of Typhus" at Aberdeen, says, that from September 1818 to September 1819, 2400 cases were admitted into the public Institutions. He refers its origin to contagion introduced from Glasgow in May 1818, merely because a female lunatic from Glasgow, received into the Asylum at Aberdeen, "soon showed symptoms of mild Typhus," and 4 others sickened within a few days. In June several cases occurred in the Dispensaries and Infirmary, and they increased from July to December. The number of cases in December 1817 were 216, but they fell in April 1818 to 110. Kerr says the cases were generally mild, but some in their symptoms approached to Plague and Yellow fever. He thinks that the contagion of Typhus is only propagated by contact, and that the air is never the vehicle of its communication.

The following Tables will exhibit some interesting facts on fever, sufficient to illustrate its irregular prevalence, &c.

No. I.—ANNUAL ADMISSIONS INTO VARIOUS HOSPITALS.

	Kendal.	Leeds.	Man- chester.	Glas- gow.	Lon- don.	Dublin.	Cork.	Lime- rick.	Water- ford.	Kil- kenny.
1795	275, v.	...	...	18	...	...	...	...	...	...
1797	84, o.	...	371	83	...	...	...	...	...	...
1798	103, xii.	...	339	45	...	...	...	...	...	...
1799	53, xiii.	...	398	128	...	...	...	...	146	...
1800	137, ii.	...	364	104	...	...	...	...	409	...
1801	263, iv.	...	747	63	...	...	...	446	875	...
1802	92, iv.	...	1070	104	164	...	...	86	419	...
1803	60, iv.	...	601	85	176	...	254	95	188	73
1804	76, vii.	...	256	97	80	497	190	90	223	90
1805	86, vi.	66	184	99	66	1733	200	86	297	69
1806	57, ii.	75	268	75	93	2540	441	84	165	56
1807	53, o.	32	311	25	63	2389	192	110	166	81
1808	68, ix.	80	208	27	69	2544	232	99	157	96
1809	116, xix.	93	260	76	29	2180	278	105	222	116
1810	47, vi.	75	278	82	52	3162	432	164	410	135
1811	61, viii.	92	172	45	43	2689	646	196	331	153
1812	16, ix.	80	140	16	61	4271	617	146	323	156
1813	79, ii.	137	126	35	85	4497	550	127	252	183
1814	73, o.	79	226	90	59	4418	845	221	175	236
1815	206, iii.	146	379	230	90	6231	717	394	403	249
1816	133, o.	121	185	399	118	4432	1026	659	307	162
1817	291, i.	178	172	714	760	6996	5325	2474	930	1100
1818	270, o.	303	...	...	...	27226	10199	6307	2729	1924
1819	145, i.	231	...	...	...	12888	2788	1502	2656	683
1820	177, o.	...	...	...	...	...	...	...	...	...
1821	209, i.	...	...	...	...	...	...	...	...	...

The Roman numbers show the number of Intermittents.

Note.—Kendal Dispensary. Proudfoot, Edin. Med. and Surg. Journ. vol. xviii. p. 374.

Leeds, House of Recovery. Hunter, Edin. Med. and Surg. Journ. vol. xv. p. 234, and vol. xvi. p. 313.

Manchester, House of Recovery. Holmes, Edin. Med. and Surg. Journ. vol. xiv. p. 534.

Glasgow, Royal Infirmary. Graham, Edin. Med. and Surg. Journ. vol. xiv. p. 534.

London, Fever Hospital. Bateman.

Ireland. Harty's Historical Sketch.

**No. II.—DATES OF COMMENCEMENT OF THE EPIDEMIC OF
1816—1819.**

	1816.	1817.	1818.	1819.
<i>Jan.</i>		Waterford, Limerick, Downpatrick.		
<i>Feb.</i>		Baltinglass, Leitrim, Ballyshannon, Donegal.		
<i>Mar.</i>		Derry, Sligo, Tuam, Armagh, Newry, Lifford, Mohill, Fermoy, Bandon, Ardee, Loughrea, Birr, Kildare, Naas, Ballinasloe, Killarney, Carrickmacross, Roscommon, Tipperary, Dungannon, Enniskillen, Limavady, Athlone.		
<i>Apr.</i>		Strabane, Belfast, Killy- handra, Ennis, Cahir, Mullingar, Galway, Kilkenny.	Maryborough.	
<i>May</i>		Lisburn, Monaghan, Cavan, Navan, Castle- bar, Longford, Cashel, Clonmel.		
<i>June</i>		Tralee, Trim, Carnew, Moate, Tullamore, Balbriggan, Balinrobe, Lurgan, Bray, Antrim, Boyle, Randalstown, Carrickfergus, Dungar- von, Tallow, Kinsale, Youghall, Wicklow, Arklow, Maynooth.	Aberdeen.	Alford. (Scotland.)
<i>July</i>	Enniskillen.	Carlow, Athy, Slane, Kells, Carrick. Edinburgh, Carlisle, Newcastle.	Witney. (Oxfordshire.)	
<i>Aug.</i>	Cork, Carnew, New Ross, Newry, Edenderry.	Drogheda, Dunleer, Dun- dalk, Newport. London, Leeds.	Wexford, Dingle. (Ireland.) Lentrather. (Scotland.)	
<i>Sept.</i>	Galway, Killala, Tipperary, Cove, Carlow.	Dublin, Tralee, West port.		
<i>Oct.</i>	Auchtermuchty, Mallow, Passa- ge, Cishel, Downpatrick.			
<i>Nov.</i>	Nenagh.	Liamore.		
<i>Dec.</i>	Armagh, Mona- ghan.			

No. III.—SHOWING THE RISE AND FALL IN THE MONTHLY
NUMBER OF CASES.

1817.	Dublin.	Leeds.	Cork.	Edin- burgh.	Wex- ford.	Kn- larry.	Mon- aghan.	Mallow.	New Ross.	Carlisle.
Jan.	308	17	161	22	3	...	...	...	11	...
Feb.	271	8	151	17	4	...	...	...	15	...
Mar.	333	11	159	19	9	...	...	...	11	...
Apr.	333	15	181	40	8	...	...	...	16	...
May	435	7	230	38	10	...	...	...	13	...
June	423	7	219	27	9	...	...	15	16	...
July	365	6	517	36	7	48	...	21	19	6
Aug.	416	10	543	42	6	46	159	54	17	12
Sept.	796	24	692	52	9	50	100	87	14	14
Oct.	907	28	729	54	7	41	98	56	18	51
Nov.	1049	18	694	65	6	47	81	48	20	38
Dec.	1360	27	799	99	12	64	78	56	25	29
1818.										
Jan.	1491	50	679	96	13	98	75	77	25	24
Feb.	1663	18	694	96	11	87	80	69	24	19
Mar.	1712	23	793	142	12	86	29	50	26	45
Apr.	1710	28	828	136	10	70	9	65	27	53
May	1854	17	934	110	11	135	76	84	53	40
June	2131	10	1020	140	14	146	54	81	54	36
July	2501	16	1269	113	29	97	129	79	95	25
Aug.	2746	21	1111	133	33	78	60	78	87	8
Sept.	2699	31	749	121	35	69	9	94	82	9
Oct.	3007	40	776	177	28	49	...	91	86	11
Nov.	2888	30	680	142	30	51	...	48	65	11
Dec.	2824	19	666	166	32	42	...	50	46	15
1819.										
Jan.	2394	30	544	152	40	22	...	47	44	11
Feb.	1682	17	480	143	36	22	...	37	47	...
Mar.	1702	13	374	139	24	17	...	...	...	...
Apr.	1311	20	278	129	18	25	...	...	...	...
May	1334	24	223	135	49	29	...	...	...	...
June	996	13	241	78	42	19	...	...	...	...
July	...	13	161	66	...	...	...	...	...	...
Aug.	...	11	149	49	...	...	...	...	...	...
Sept.	...	36	122	53	...	...	...	...	...	...
Oct.	...	37	78	42	...	...	...	...	...	...
Nov.	...	12	67	36	...	...	...	...	...	...
Dec.	...	5	71	...	...	...	...	...	...	...

The rate of mortality from fever in England and Scotland varies very greatly. At

Manchester, the average of 21 years was	. 1 in 11
London, in the epidemic of 1817	. 1 — 13½
Edinburgh, —————	. 1 — 22½
Leeds, the average of 15 years	. 1 — 12½
Kendal, ————— from 1783 to 1822	. 1 — 27
Witney	. 1 — 36
Alford, (Scotland)	. 1 — 25
Carlisle	. 1 — 10

No. IV.—EXHIBITING THE NUMBER OF CASES AND DEATHS,
AND THE AVERAGE MORTALITY, 1817—1819, IN IRELAND.

	1817.		1818.		1819.		Total Cases.	Total Deaths.	Average Mortality.
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.			
Tipperary . . . . .	.....	.....	233	25 $\frac{1}{2}$	3	3	236	28 $\frac{1}{2}$	in 8
Mallow	337	15 $\frac{1}{2}$	866	90 $\frac{1}{2}$	84	4 $\frac{1}{2}$	1287	109 $\frac{1}{2}$	— 13
Cashel	237	6 $\frac{1}{2}$	354	38 $\frac{1}{2}$	30	3 $\frac{1}{2}$	621	46 $\frac{1}{2}$	— 13 $\frac{1}{2}$
Kilkenny	743	45 $\frac{1}{2}$	1981	133 $\frac{1}{2}$	346	31 $\frac{1}{2}$	3070	209 $\frac{1}{2}$	— 14 $\frac{1}{2}$
Armagh	115	11 $\frac{1}{2}$	48	0	.....	.....	163	11 $\frac{1}{2}$	— 15
Limerick	2474	183 $\frac{1}{2}$	3307	211 $\frac{1}{2}$	997	35 $\frac{1}{2}$	6778	429 $\frac{1}{2}$	— 15 $\frac{1}{2}$
Ennis	19	0	519	32 $\frac{1}{2}$	26	1 $\frac{1}{2}$	564	33 $\frac{1}{2}$	— 17
Belfast	961	50 $\frac{1}{2}$	1608	101 $\frac{1}{2}$	389	15 $\frac{1}{2}$	2958	166 $\frac{1}{2}$	— 17 $\frac{1}{2}$
Randalstown	117	7 $\frac{1}{2}$	182	9 $\frac{1}{2}$	.....	.....	299	16 $\frac{1}{2}$	— 18 $\frac{1}{2}$
Bandon . . . . .	.....	.....	1073	57 $\frac{1}{2}$	105	5 $\frac{1}{2}$	1178	62 $\frac{1}{2}$	— 19
Lisburn	164	6 $\frac{1}{2}$	282	18 $\frac{1}{2}$	23	0	469	24 $\frac{1}{2}$	— 19 $\frac{1}{2}$
Clonmel	758	28 $\frac{1}{2}$	2660	147 $\frac{1}{2}$	259	14 $\frac{1}{2}$	3677	189 $\frac{1}{2}$	— 19 $\frac{1}{2}$
Monaghan	516	28 $\frac{1}{2}$	521	25 $\frac{1}{2}$	.....	.....	1037	53 $\frac{1}{2}$	— 19 $\frac{1}{2}$
Dublin	6996	481 $\frac{1}{2}$	27226	1136 $\frac{1}{2}$	9419	525 $\frac{1}{2}$	43641	2142 $\frac{1}{2}$	— 20 $\frac{1}{2}$
Waterford	930	34 $\frac{1}{2}$	2729	109 $\frac{1}{2}$	1898	98 $\frac{1}{2}$	5557	241 $\frac{1}{2}$	— 23
Tullamore	148	8 $\frac{1}{2}$	198	7 $\frac{1}{2}$	29	1 $\frac{1}{2}$	375	16 $\frac{1}{2}$	— 23 $\frac{1}{2}$
Dungannon	192	9 $\frac{1}{2}$	19	0	.....	.....	211	9 $\frac{1}{2}$	— 23 $\frac{1}{2}$
Wexford	90	1 $\frac{1}{2}$	258	8 $\frac{1}{2}$	209	13 $\frac{1}{2}$	557	22 $\frac{1}{2}$	— 25 $\frac{1}{2}$
Sligo	257	14 $\frac{1}{2}$	484	15 $\frac{1}{2}$	74	3 $\frac{1}{2}$	815	32 $\frac{1}{2}$	— 25 $\frac{1}{2}$
Newry	570	27 $\frac{1}{2}$	894	26 $\frac{1}{2}$	81	6 $\frac{1}{2}$	1545	59 $\frac{1}{2}$	— 26
Cahir	250	11 $\frac{1}{2}$	414	14 $\frac{1}{2}$	.....	.....	664	25 $\frac{1}{2}$	— 26 $\frac{1}{2}$
Youghal	235	6 $\frac{1}{2}$	372	17 $\frac{1}{2}$	16	0	623	23 $\frac{1}{2}$	— 27
Carriick	96	6 $\frac{1}{2}$	187	5 $\frac{1}{2}$	19	0	302	11 $\frac{1}{2}$	— 27 $\frac{1}{2}$
Strabane	370	12 $\frac{1}{2}$	199	7 $\frac{1}{2}$	16	2 $\frac{1}{2}$	585	21 $\frac{1}{2}$	— 28
Carriick (Suir)	40	0	794	27 $\frac{1}{2}$	287	12 $\frac{1}{2}$	1121	39 $\frac{1}{2}$	— 28 $\frac{1}{2}$
Tallow . . . . .	.....	.....	183	5 $\frac{1}{2}$	24	2 $\frac{1}{2}$	207	7 $\frac{1}{2}$	— 29 $\frac{1}{2}$
Kells	110	1 $\frac{1}{2}$	246	9 $\frac{1}{2}$	30	3 $\frac{1}{2}$	386	13 $\frac{1}{2}$	— 29 $\frac{1}{2}$
Carlow	128	5 $\frac{1}{2}$	510	15 $\frac{1}{2}$	54	3 $\frac{1}{2}$	692	23 $\frac{1}{2}$	— 30
Dundalk	438	21 $\frac{1}{2}$	489	9 $\frac{1}{2}$	102	4 $\frac{1}{2}$	1029	34 $\frac{1}{2}$	— 30
Portneehinch . . . . .	.....	.....	419	12 $\frac{1}{2}$	96	4 $\frac{1}{2}$	515	16 $\frac{1}{2}$	— 32
Stratford	82	2 $\frac{1}{2}$	460	8 $\frac{1}{2}$	269	15 $\frac{1}{2}$	811	25 $\frac{1}{2}$	— 32 $\frac{1}{2}$
Cork	5075	174 $\frac{1}{2}$	10199	291 $\frac{1}{2}$	2140	57 $\frac{1}{2}$	17414	522 $\frac{1}{2}$	— 33 $\frac{1}{2}$
Parsonstown	219	7 $\frac{1}{2}$	501	13 $\frac{1}{2}$	39	1 $\frac{1}{2}$	759	21 $\frac{1}{2}$	— 36
Killeshandra . . . . .	.....	.....	.....	.....	.....	.....	810	22 $\frac{1}{2}$	— 36 $\frac{1}{2}$
Tralee	331	16 $\frac{1}{2}$	620	9 $\frac{1}{2}$	157	4 $\frac{1}{2}$	1108	29 $\frac{1}{2}$	— 38
Lismore . . . . .	.....	.....	199	5 $\frac{1}{2}$	35	1 $\frac{1}{2}$	234	6 $\frac{1}{2}$	— 39
Oldcastle . . . . .	.....	.....	.....	.....	.....	.....	623	16 $\frac{1}{2}$	— 39
Tuam	167	5 $\frac{1}{2}$	126	2 $\frac{1}{2}$	11	0	304	7 $\frac{1}{2}$	— 43 $\frac{1}{2}$
Westport	42	0	591	13 $\frac{1}{2}$	15	0	648	13 $\frac{1}{2}$	— 50
Gorey	20	0	192	4 $\frac{1}{2}$	25	0	237	4 $\frac{1}{2}$	— 59
Killarney	296	4 $\frac{1}{2}$	1007	15 $\frac{1}{2}$	134	4 $\frac{1}{2}$	1437	23 $\frac{1}{2}$	— 62
Kilcullen . . . . .	.....	.....	362	4 $\frac{1}{2}$	58	1 $\frac{1}{2}$	420	5 $\frac{1}{2}$	— 84
Killucan	99	1 $\frac{1}{2}$	312	4 $\frac{1}{2}$	16	0	427	5 $\frac{1}{2}$	— 85
New Ross	195	3 $\frac{1}{2}$	670	7 $\frac{1}{2}$	91	1 $\frac{1}{2}$	956	11 $\frac{1}{2}$	— 87
Arklow . . . . .	.....	.....	159	1 $\frac{1}{2}$	56	0	215	11	— 215

No. V.—SHOWING ORIGIN, &c., IN THE COUNTIES OF IRELAND.

<i>Province of Munster.</i>	<i>Origin.</i>	<i>Commencement.</i>	<i>Greatest Prevalence.</i>	<i>Duration.</i>	<i>Population.</i>	<i>Number of Sick.</i>
Cork, (City.)	Spontaneous. Contagion augmented by mendicants.	August 1816.	June and August 1818.	3 years.	80,000	28,000
Cork, (County.)	Spontaneous in many places. Contagion diffused by mendicants from Kerry.	Spring 1817.	Summers of 1817 and 1818.	2 years.	660,000	132,000
Kerry, (County.)	Spontaneous and simultaneous in different parts.	Spring 1817.	Ditto.	ditto.	180,000	30,000
Clare, (County.)	Spontaneous. Diffused by mendicants.	Spring 1817.	Spring and summer of 1818.	ditto.	160,000	13,333
Limerick, (City.)	Spontaneous. No obvious introduction from without.	January 1817.	Summer and autumn of 1817 and 1818.	2½ years.	65,000	18,000
Limerick, (County.)	Spontaneous. Great diffusion of contagion from mendicants.	Spring 1817.	Winter of 1817; summer of 1818.	1½ year.	200,000	20,000
Tipperary, (County.)	Spontaneous at first, except on the borders of Cork and Kerry.	Winter of 1816, and spring and summer of 1817.	Summer and autumn of 1818.	2 years.	280,000	28,000
Waterford, (City.)	Spontaneous.	January 1817.	Autumn 1818; winter of 1818 and 1819.	2½ years.	25,000	5,000
Waterford, (County.)	Spontaneous in some places; evidently introduced in others.	Summer and autumn of 1817.	Summer and autumn of 1818.	2 years.	120,000	12,000

<i>Province of Leinster.</i>	<i>Origin.</i>	<i>Commencement.</i>	<i>Greatest Prevalence.</i>	<i>Duration.</i>	<i>Popula- tion.</i>	<i>Number of Sick.</i>
Dublin, (County.)	Spontaneous. Propagated by con- tagion.	In the mountains. Winter of 1816; generally July and August 1817.	June, July and Au- gust 1818.	1½ year.	120,000	12,000
Dublin, (City.)	Contagion always prevalent. Ex- tended by poor in autumn of 1817.	September 1817.	July to December 1818.	Nearly 2 years.	200,000	60,000
Wicklow, (County.)	Spontaneous in the mountains. Pro- pagated by vagrants.	Summer 1817, earlier in the mountains.	Winter 1817; spring 1818.	ditto.	95,000	11,800
Wexford, (County.)	Spontaneous. Great diffusion from contagion from strangers.	At New Ross, August 1816. Summer 1818.	September and Oc- tober 1818.	1 year.	167,000	11,100
Kildare, (County.)	Introduced from Connaught. Fever long prevalent in parts.	Summer 1817, and earlier.	Autumn and winter 1817.	Nearly 2 years.	85,000	8,500
Carlow, (County.)	Spontaneous; often owing to itine- rant beggars.	Partially Sept. 1816. Summer 1817.	Summer and autumn 1817 and 1818.	1½ year.	70,000	6,000
Kilkenny, (City.)	Spontaneous; often aggravated by beggars.	April 1817.	The whole of 1818.	2½ years.	18,000	4,500
Kilkenny, (County.)	Propagated chiefly by vagrants.	Summer 1817.	Summer 1818.	Nearly 2 years.	135,000	13,500
Queen's Coun- ty.	Fever endemic; diffused by beg- gars.	Autumn 1817.	Autumn 1818.	1½ year.	86,000	7,160
King's County.	Clearly introduced by beggars from Longford County.	Autumn 1816; sum- mer 1817.	Winter 1817; spring and autumn 1818.	Nearly 2 years.	93,000	7,700

<i>Province of Leinster.</i>	<i>Origin.</i>	<i>Commencement.</i>	<i>Greatest Prevalence.</i>	<i>Duration.</i>	<i>Popula- tion.</i>	<i>Number of Sick.</i>
Westmeath, (County.)	Brought by beggars from Con- naught and Ulster.	Summer 1817.	Winter 1817; spring 1818.	1½ year.	100,000	6,250
Meath, (County.)	Spontaneous in many places; in- troduced in others by convales- cent beggars.	Summer 1817.	Winter 1817.	1½ year.	143,000	14,300
Louth, (County.)	Ditto ditto.	Summer 1817.	Winter 1817; spring 1818.	1½ year.	105,000	10,500
Longford, (County.)	Ditto ditto.	Summer 1817.	Winter 1817; spring 1818.	Nearly 2 years.	96,000	9,600
<i>Province of Connaught.</i>						
Galway, (County.)	Spontaneous in crowded towns. Diffused by beggars, &c., at fairs.	Autumn 1816; gene- rally spring 1817.	Spring, summer and autumn 1818.	2 years.	212,000	21,200
Mayo, (County.)	Spontaneous. Less extended by beggars than in other counties.	Summer 1817.	Variable in different parts. Winter 1817. Spring to autumn 1818.	Nearly 1½ year.	236,000	15,000
Sligo, (County.)	Spontaneous. Widely diffused by strolling beggars.	Spring 1817.	Winter 1817; spring 1818.	Nearly 2 years.	126,000	10,000
Leitrim, (County.)	Ditto ditto.	Spring 1817.	Autumn of 1817 and 1818.	ditto.	94,000	9,400
Rosecommon, (County.)	Ditto ditto.	Spring 1817.	Summer, autumn and winter 1817.	1½ year.	158,000	15,800

<i>Province of Ulster.</i>	<i>Origin.</i>	<i>Commencement.</i>	<i>Greatest Prevalence.</i>	<i>Duration.</i>	<i>Population.</i>	<i>Number of Sick.</i>
Donegal, (County.)	Generally spontaneous, especially in the mountains, and introduced.	Spring 1817.	Autumn 1817.	1½ year.	230,000	15,300
Londonderry, (County.)	Spontaneous. Diffused by beggars.	Ditto.	Summer and autumn 1817.	1½ year.	185,000	18,500
Belfast, (Town.)	Doubtful. Fever always in the town.	Summer 1817.	Autumn and winter 1817.	Nearly 2 years.	30,000	5,000
Antrim, (County.)	Generally spontaneous.	Ditto.	Ditto.	1½ year.	200,000	20,000
Down, (County.)	Spontaneous. Importation of contagion not credited.	Winter 1816 and spring 1817.	Autumn 1817 and 1818.	2 years.	288,000	48,000
Armagh, (County.)	Spontaneous; increased by great influx of mendicants in spring 1817.	Ditto.	Autumn and winter 1817.	1½ year.	120,000	15,000
Tyrone, (County.)	Disease originated in crowded habitations of begging poor.	Spring 1817.	Autumn and winter 1817.	Nearly 2 years.	250,000	73,000
Fermanagh, (County.)	Spontaneous among the poor.	Autumn 1816 and spring 1817.	Autumn 1817.	1½ year.	110,000	7,300
Cavan, (County.)	Spontaneous among the poor.	Spring 1817.	Autumn 1817 and 1818.	1½ year.	118,000	7,800
Monaghan, (County.)	Appeared first in the jail. Generally spontaneous; spread by begging poor.	December 1816 and May 1817.	Ditto.	Nearly 2 years.	140,000	17,500

No. VI.—SHOWING POPULATION, PROPORTION OF SICK, &c.

	Population.	Number of Sick.	Proportion of Sick to Well.	Deaths as 1 in 22½.
Munster . .	1,770,000	286,333	1 in 6½, or 6 in 37	12,725
Ulster. . .	1,671,000	227,400	1 in 7½, or 3 in 22	10,100
Leinster . .	1,513,000	182,910	1 in 8½, or 4 in 33	8,100
Connaught .	826,000	71,400	1 in 11½, or 5 in 58	3,175
Total . .	5,780,000	768,043	1 in 7½, or 2 in 15	34,100

This general estimate, taken from the very interesting Tables of Harty, is to be considered merely as an approximation to truth. In so general an epidemic it is impossible to obtain precise data. The registered number of the sick was about 150,000, and of these 6100 died, or 1 in $24\frac{3}{4}$; but over a great extent of country there were often no medical aid or charities to superintend and receive the sick. The number of cases, received *into hospitals*, Harty estimates at over 100,000, not including those treated at dispensaries. This would leave a vast amount of fever with its contagious venom to infect a continent! for more than 600,000 cases must have been left to spread disease *ad libitum*. Estimating the population at 6 millions, and those not affected by fever at 5,250,000, the number of the sick abroad, not received into hospital, was to the well as 1 to $8\frac{1}{4}$; a proportion which, on the doctrine of contagion, may excite a wonder that the greater part of the inhabitants did not suffer from the disease, especially if we add the contagion attributed to the clothes, walls, floors, beds of those infected: and it certainly tends to throw a doubt on the absolute necessity of Fever Hospitals as *preventatives of contagion*, considering the general

and often simultaneous decline of the fever in 1819; though there never can be a question of their utility in ameliorating the condition, and eminently favouring the recovery of the sick.

The returns from Strabane, *including the Marquis of Abercorn's estate adjacent*, affords, from the precision of the reports made by the medical men of that district, a test of the low estimate taken in the above summary of the total amount of the sick throughout Ireland. It appears from these reports that out of a population of 30,296 individuals, 9404, or 1 in $3\frac{1}{8}$, were affected with fever, and the deaths were 639, or 1 in 14, from July 1817 to October 1818. On the Marquis's estate, where prompt attention was given to the people, the sick to the well was as 4 to 11, or 1 to $2\frac{3}{4}$.

It is evident from the inspection of Table No. 1, that Typhus is the endemic fever of at least all those places which are enumerated in it, and we may suppose of Great Britain and Ireland. If evidence can be adduced of the existence of Intermittents in some or all of the localities of the kingdom, they must be comparatively few in number, never of any general prevalence, nor of any formidable character; so that the distress and mortality consequent upon fever in these latitudes are attributable to the continued type. It may be asked, since Intermittents occasionally are found in England and Ireland, why, on the supposition of their arising from malaria, they are so few in number compared with Italy; and why Typhus, which Fothergill and Huxham frequently observed to arise out of the Intermittent and Remittent

types, is so universal? I can conceive of no possible solution of this anomaly, but on the supposition that whatever be the cause or causes of Intermittents in the South of Europe, the same are the sources of Typhus in the north, and that the explanation of the different phases of fever is to be sought for in the only invariable difference of circumstance in the two regions, viz. that of mean temperature.

That Typhus universally and exclusively depends on contagion for its origin and diffusion, the testimony of the Irish physicians, in Table No. 5, sufficiently disproves; and as Bateman and many other English authorities admit of its spontaneous origin, the question as to this point must be considered as set at rest. Whether, so arising, it is ever propagated by a contagion *sui generis*, is a circumstance that future inquiry must determine; for though the balance of opinion is very general in its favour, the mind of the profession, so recently and so universally absorbed by the doctrine of exclusive contagion, is not unbiassed enough at present to decide upon it. That great changes have occurred in medical opinion on the subject of fever within the last 15 or 20 years, is apparent, from the doctrines of the exclusive contagiousness and debility of Typhus having been very generally abandoned, and from the change that has taken place with regard to the causes of Yellow fever; and it cannot be doubted that the spirit of free inquiry which is abroad will lead to essential modifications in the opinion that now prevails as to the causes which contribute to the diffusion of Typhus.

At Kendal, in latitude $54^{\circ}.15'$, Dr. Proudfoot, among the cases of fever treated at the dispensary for 26 years, from 1795 and 1797 to 1821, enumerates Intermittents in 19 of the specified years; and it is remarkable that as Typhus rose in amount in the last 7 years, the Intermittents almost disappeared.

	Intermittents.		Typhus.	
1795 to 1812 ..	110	1646 ..	1 to 15	
1813 — 1821 ..	8	1583 ..	1 — 198	
1795 to 1821 ..	118	3229 ..	1 to 274	

Examining the Table, by taking series of years in which the average of Typhus varied,—for it was greater in the last 7 and in the first 6 years than in the 13 intermediate ones,—the proportions were:

	Interm ^{ts} .	Typhus.	
1802 to 1814 (annual average of Typhus 68) ...	76	884...1 to 112	
1795 — 1801 (————— 152) ...	36	914...1 — 254	
1815 — 1821 (————— 205) ...	6	1431...1 — 238	
		118	3229.

Or taking the 13 intermediate years, and the 13 at the two extreme periods, it would be

	Inter ^{ts} .	Typhus.	
13 years (annual average of Typhus 68) ...	76	884 ... 1 to 112	
13 — (————— 180) ...	42	2345 ... 1 — 56	
		118	3229.

If we select the 14 years in which the annual amount of Typhus was below 100, and the 12 in which it exceeded this amount, the proportion would be

	Interm ^{ts} .	Typhus.	
14 years (annual average of Typhus 64½) ...	70	904...1 to 13	
12 — (————— 194) ...	48	2325...1 — 484	
		118	3229.

These results afford sufficient proof, perhaps, of the cause of Intermittents being endemic about Kendal, and that they were not derived, like the cases frequently met with in the spring in Edinburgh, from the agueish districts of Lincolnshire, by persons resorting to that part of England to work in harvest time. Dr. Proudfoot, indeed, does not allude to any foreign source, but refers them to a valley between Kendal and the sea. The town is situated on the river Kent, built partly on the side, but principally at the foot of a hill, which runs north and south; at the southern extremity is a suburb called Kirkland, which lies low, more immediately on the river, and separated from Kendal by a streamlet, which is often suddenly swollen, inundating several of the houses. "In the summer, when it is sometimes dried up, the exhalations from its channel become extremely offensive. The church is situated on the angle formed by the river and the rivulet, and this is perhaps the most unhealthy part of the town. It has appeared that cases of fever, &c., from this neighbourhood were greater in proportion to the population than in other parts. Dirty, narrow, crowded, ill ventilated apartments, with a sedentary life, and a scarcity of fuel, to which many of the inhabitants of this vicinage are exposed, have obtruded themselves on the notice of the most superficial observer as the more prominent causes of Typhus, or the common fever of this country. It is true, we have neither swamps nor marshes here, neither is there much vegetable matter produced in the neighbourhood of the streamlet, but when it is low, there is often

an abundance of putrid animal and vegetable matter to account for the prevalence of disease. When the streamlet is apparently dried up, upon a more accurate inspection the water will be found to infiltrate through the sandy soil, and water may always be found by digging a few feet from the surface. . . . The river empties itself into an arm of the sea, called the Lancaster Sands, about 7 miles from Kendal. These sands run in a line with a valley at the back of the hill, and at the bottom of this vale there is an extensive moss, which has been lately improved by draining. Formerly Intermittent fevers were prevalent in this neighbourhood, in the vernal and autumnal months, but they have now become of very rare occurrence."

It will be admitted that this description of the most unhealthy part of Kendal is like many localities in more southern latitudes where Intermittents prevail; and yet though this type of fever is found among the diseases of the town, it bears a very small proportion to the Continued type, varying with it, rising on the average when it declines, or nearly disappearing when it prevails to an unusual amount; as if there were circumstances favouring the one, and at the same time unfavourable to the other. It might be argued, that fever probably varies according to the quality and concentration of the remote cause, and to the predisposition of the individual; that the comparatively robust peasant, exposed to marsh effluvium, strictly so called, would exhibit the Intermittent type, and the pale, wan, enervated inhabitant of the town,

exposed to an unventilated atmosphere, would exhibit the Continued. But though this speculation is plausible where both types are found existing together, it fails in application in Scotland, where Intermittents are said not to exist indigenous to the soil, and in southern countries, where Continued Typhus is entirely unknown.

That the types of fever, however distinct in their extreme forms, are to be considered as modifications of one disease, can scarcely admit of a doubt, especially since the common fever of this country is now admitted to arise independent of contagion. Its mildest forms may be considered as the representatives of the simple Ague of the south, and the great liability to relapse in these and other cases appears in favour of the analogy.

Dr. Bracken of Waterford affords some very interesting data as to the duration of the fever, and the number of relapses in that city.

Days of Convalescence.

Days.	Cases.	
3	4	1372, or more than half, on or before the 8th day.
4	37	
5	48	
6	349	
7	90	
8	844	995, more than $\frac{1}{4}$ ths, in or before the end of 2nd week.
9	102	
10	270	
11	137	
12	199	
13	62	
14	51	
15	174	

Days.	Cases.	
16	22	} 172
17	16	
18	51	
19	18	
20	20	
21	27	
22	18	} 43
23	8	
24	7	
25	6	
26	7	
27	4	
28	4	
29	0	
30	3	
31	4	

Out of 2729 cases in 1818, 258 relapsed, or 1 in 10 $\frac{1}{2}$.

Dr. Bracken says, "The days on which convalescence or remarkable improvement took place in these 2582 cases, are correctly marked. But it is obvious to any one acquainted with hospital practice, that the favourable change always occurred the night preceding the day on which the physician made his remarks; so that the 199 cases referred to the 12th, properly belonged to the 11th day, and so of all the cases. From this mode of examination, it appears that the critical days are very remarkable indeed. Very many cases, besides those marked as relapsed, did actually relapse. I suppose not less than 700 persons, during the year (1818), either relapsed; or were attacked a second or third time with fever."

If Dr. Bracken's remark be admitted as just, as

to the change for the better taking place on the night preceding the day on which convalescence is noted, the amendment on the odd days would exceed that of the even days as follows :

Odd Days.	Cases.	Even Days.	Cases.
3	37	2	4
5	349	4	48
7	844	6	90
9	270	8	102
11	199	10	137
13	51	12	62
15	22	14	174
1772		617	

If, as Senac and others believe, the Tertian is the true type of Intermittents, and if the common nature of the periodic and the continued types is rendered more than probable from other considerations, this preponderance of decided recovery on the odd over the even days lends support to the idea of their being essentially one disease.

That the mild cases, however short in their duration, are to be considered examples of that disease to which the conventional name of Typhus is applied, does not admit of doubt, from the circumstance of every shade of severity in regard to symptoms being observed in the same house, or the same neighbourhood, at the same time during an epidemic prevalence of fever. Bateman says that all his observations have tended to impress him with the conviction of the identity of the disease under all its modifications: and Louis recognises *la fièvre Typhoïde* in slight as well as violent cases. In the

continued type, therefore, there is a gradation of fever as remarkable as in the periodical ; the cases of the one, terminating after a few days' slight indisposition, but liable to relapse, and frequently ending critically on one of the odd days, being analogous to the simple Ague of the other, which we know is remarkable for its tendency to return : and the more aggravated cases of the Continued find equally their counterparts in the pernicious Intermittents and Remittents, which often pass into the continued type, as the other does into the periodical.

Dr. M'Donald of Cavan, in speaking of the epidemic, says, " In 1819 there was a peculiarity which I do not find stated accurately by any author ; this was a disposition in most cases to end upon the 7th day, by a well marked crisis ; whereas, in 1818, the crisis seldom occurred before the 14th day ; and an observation of Hippocrates was fully verified, for after every such early crisis they uniformly relapsed, and the second crisis was apt to happen on the 5th day."

Dr. Brereton, in March 1819, says, " The fever prevalent for the last 15 months at Tullamore is the pure Synocha of Cullen, terminating in 5 or 7 days, but subject to frequent relapses." Dr. Mawe of Tralee says, " The fever has been extremely mild in this part of the county. The persons affected who could not procure medical aid, generally recovered with cold water as their only drink and medicine. From June 1817 to March 1819, out of 939 cases, 14 died ; 1 in 67."

Dr. Crampton, in his " Medical Report of Fever in Steevens Hospital, Dublin," speaks of the sudden

increments of the epidemic after wet weather: "From December 1818 to March 1819, relapses were frequent, or rather those apparently convalescent lay down for a day or two after a shivering, and a profuse sweat gave a full and final solution of fever. The disease was also shorter in its duration; and this change, with the subsidence of the epidemic in many places where a like change in the type had occurred previous to its decline, afforded a prospect of a cessation of fever in Dublin. From March to July, a short relapse, preceded by shivering, and followed by profuse sweats, ending in a complete solution of the disease, was a very common occurrence."

Dr. Stewart of Lisburn says, "I never recollect the town or neighbourhood without some cases of mild Typhus. I cannot attribute its increase in May 1817 to any contagion accidentally introduced. Relapses were more frequent, in proportion to the general number, than occurred in any fever since I commenced practice, now upwards of 28 years."

Dr. Ryan of Armagh says, the epidemic seemed to have commenced as early as December 1816; appeared to have originated spontaneously; advanced gradually to October and November 1817, and after that period suddenly subsided. Dr. Simpson adds, "A Fever Hospital was opened in September 1817; but the disorder had then become so general, and the number that could be admitted into it so small, in proportion to those affected, that I cannot think it had any influence in checking the progress of the disorder."

Dr. Nicholls of Navan says: "That there is some-

thing in the constitution of the air favourable to the production of fever, or that the atmosphere is to a certain degree loaded with the contagion, would appear from this, that the causes which usually produce catarrh, rheumatism, &c., produce these diseases complicated with fever, or the symptoms of fever speedily supervened on those belonging to the diseases just mentioned. I cannot say that I observed anything to favour or counteract contagion, except the state of the weather: when it was fair and settled, the number of the affected decreased; when wet, cold and disagreeable, it increased."

Dr. Fisher of Slane says, "The disease was subject to the greatest fluctuation, suddenly disappearing, and as suddenly becoming prevalent: from July 1817 to March 1819, out of 779 cases of fever, 8 were fatal; 1 in 97.

Dr. Graham, in his "Practical Observations" on the fever at Glasgow, says, "The character of the cases changed remarkably; one week severe, the next mild ones only occurred. Many were mere languor, debility and headache, but still often tedious; and such cases often, 2 or 3 weeks after, passed into or through a regular disease."

An examination of Table III., showing the rise and fall in the monthly number of cases, will support the idea of some general influence affecting the development of fever, far more powerful than the adventitious operation of contagion, which ought, upon the old doctrine of its being essential to fever, to produce an arithmetical increase in the number of cases. In Dublin, from April to August 1818, there is a gradual increase; but at Monaghan

the numbers are successively 9, 76, 54, 129, 60, 9; and the comparative variations in the different columns can only be explained by the local climates and their vicissitudes. Table No. 1. shows that at Kendal, Leeds, Manchester, Glasgow, London, Dublin, Limerick, Waterford, there was an increase in the annual amount of fever in 1815. At Cork the increase began in 1816, though in Dublin the cases that year were 2000 below the number in 1815; and in Waterford they fell from 403 to 307. The summer of 1816 is considered as the commencement of the epidemic in Ireland; and on inspecting the map in Dr. Harty's valuable work, I find the following evidence of simultaneous origin in remote parts of the island.

<i>Munster.</i> —1816.	<i>Leinster.</i> —1816.	<i>Connaught.</i> —1816.	<i>Ulster.</i> —1816.
Cork, August.	New Ross, Aug.	Galway, autumn.	Enniskillen, July.
Cove, September.	Carnew, August.	Killala, Sept.	Newry, August.
Tipperary, Sept.	Edenderry, Aug.		Downpatrick, Oct.
Cashel, October.	Carlow, Sept.		Armagh, Dec.
Nenagh, Nov.			Monaghan, Dec.

Wexford, not far from New Ross, was not affected by the epidemic till August 1818, 2 years after it had reached the latter place; and Dublin, not very remote from Edenderry, was not affected till September 1817, 13 months after the former.

It is evident, therefore, that local causes, independent of contagion, which, so far as the actual existence of disease is concerned, may be said to have been profusely abundant throughout Ireland, whether atmospheric, influencing predisposition, or connected with malaria, must be resorted to to account for the irregular rise of the fever, commencing as early as 1816 in some places, or not till 1818 in

others. We find it at Enniskillen in July; at Cork, at New Ross, and Edenderry in August; at Cove, Killala, and Tipperary in September; at Cashel and Downpatrick in October: and it was remarked that where it first prevailed it soonest declined. This irregularity of rise and prevalence is in perfect accordance with the epidemics of Periodical fever, which fell with inexplicable severity in particular localities, leaving others under apparently similar circumstances untouched, though these latter places are visited in their turn when health is restored, or nearly so, to the first scenes of the ravages of fever. These facts, which belong equally to the fevers of the Madras Government, to those of Italy and America, clearly point to local causes, however difficult it may be to assign them: nor do they in Ireland affect the question of contagion in its Continued fever, any more than that of the periodical types in the other countries; for the former, like the latter, is admitted to have been in a vast majority of instances spontaneous in its origin, and what were taken as consequences might be merely coincidences. The almost universal testimony of the British and Irish physicians is in favour at least of the frequent spontaneous rise of the endemic fever of the kingdom; and filth, confined and vitiated air, are at the same time said to be causes of the disease in the first instance, and then the necessary vehicles of contagion after it is formed. But I have shown from Bateman, and Clarke, and Haygarth, that fever through many successive years, with contact of the sick, and of the fomites formed by their clothes, &c., is inadequate to produce itself, so long as or-

dinary cleanliness and ventilation are observed. I may add the weight of Dr. Crampton's testimony: he says in the work I have already noticed, that Steevens Hospital, from December 1800 to May 1802, was chiefly used for chronic cases of all kinds, for in 3 wards of which he had the care, 293 patients were admitted, and only 58 were cases of fever. Though the fever patients were mixed with the others, no infection occurred; and this exemption held true for the last 20 years, which he ascribes to the use of iron bedsteads and ventilation. Antecedent to the above date, when there was less perfect ventilation, the fever frequently spread.

But these circumstances are more clearly in favour of the impure air, than of a contagion *sui generis*, being the cause of fever, especially when it is admitted that the ill ventilated and filthy rooms of the poor, and even the crowding of other diseases than fever in hospitals, or even of healthy persons, are occasionally adequate to the production of fever. In an epidemic state of atmosphere slight causes will, where contagion has no concern whatever, give development to the reigning disease. Rush shows this to have been the case in Philadelphia in 1793, and Dr. Nicholls of Navan observed that catarrh or rheumatism was followed by the fever in 1817. In hospitals, therefore, where the wards are crowded, when distress, fatigue, neglect of cleanliness and ventilation are inseparable from the hurry and confusion, and excitement of the applications and the entries during an epidemic, fever occasionally attacking the attendants is not an unequivocal proof of contagion, when taken into consideration with

all those other circumstances which disprove it elsewhere.

The frequent existence of Typhus in the prisons of this country in former times was undoubtedly owing to the utter neglect in which those receptacles of misery and misfortune were left. I cannot find any clear evidence of contagion operating in those of Ireland during the epidemic of 1816, &c., though the disease occasionally found its way into them. Harty says that the Newgate of Dublin generally contains 300 inmates, without sufficient accommodation for more than half, or proper accommodation for a third. The sleeping-cells, 58 in number, are 12 feet by 8, and 9 feet high, with doors of grated iron, and a small aperture in the wall. In winter the doors are covered by mats, and the hole stuffed with straw. "In what state, then, must the air of these cells be, when 7, 8, or 9 persons are crammed together, as is frequently the case when delay occurs in transporting the convicts? Fever may be deemed the endemial disease of the prison, being seldom absent from it for any length of time; but, except during the late epidemic season, it was almost always to be traced to the over-crowded cells. This fact is deserving of particular notice, as illustrating the nature and origin of contagion. It is not a little remarkable that fever, previous to 1818, prevailed chiefly among the convicts, who were liable to be over crowded, and but little exposed to the casual introduction of contagion. The City Marshalsea has tolerable space for exercise, but is extremely deficient in the lodging accommodation for its wretched inmates, varying from 60 to 120.

The hall appropriated for these poor debtors, occupied by them night and day, is 30 feet by 15, and generally contains from 30 to 50 persons. It is astonishing that so few are affected by fever, which I can only explain from the current of prisoners being very rapid, few remaining in confinement more than 3 or 5 weeks. The annual committals have varied from 500 to 1200 within the last 8 years, and yet only 2 deaths from fever have occurred in it. In Newgate, from 1812 to 1819, out of 11,436 committals there have been 374 cases of fever, or 1 in $30\frac{1}{2}$ about, and 7 deaths, or 1 in $53\frac{1}{2}$."

Dr. Roe of Cavan says, that "if any proof was wanting that bad air, or a want of ventilation, was a great cause of fever, I have merely to state that the fever which existed in the gaol of Cavan since January 1818, was almost exclusively confined to the debtors, who, from the unexampled crowded state of the prison, were obliged to sleep in small, very crowded and ill ventilated rooms."

At Clonmel the committals from August 1810 to March 1820, were 7016, and only 5 deaths occurred from fever.

These facts show that jail fever, even in Ireland, where distress is so abundant, is prevented to a very great extent by habits of cleanliness, and that the mortality from it is very small. If the disease can arise spontaneously, it is no wonder that in former times it prevailed in prisons where no attention was paid to cleanliness and ventilation.

The causes to which fever has been ascribed are various, as war, famine, want of employment, depression of mental and bodily energy, contagion,

filth, uncleanness, crowded, ill ventilated rooms, malaria, and a peculiar inscrutable constitution of atmosphere.

In a subject involved in such obscurity, all that can be hoped for is the rejection of such causes as do not seem applicable in all cases to the generation of fever, and the selection of such as appear to exert an influence over it.

War, it is evident, can have nothing to do directly with the generation of fever in Great Britain and Ireland; and few, perhaps, will think that it has any indirect influence over it. The Scotch physicians attributed the epidemic of 1817 to contagion imported from Ireland; and Barker, that of his own country, to contagion generated during war on the continent of Europe, and brought by the soldiery to Ireland; though it is sufficiently evident a fever precisely like that of the epidemic exists in all parts of this country, as an endemic disease, and consequently, if contagion be essential to its diffusion, that it may be found at all times in a thousand localities, without going abroad for it. Barker accounts for the epidemic by imagining the fresh contagion, newly imported, to be more active than the old one already existing in Ireland; and he points to the situation of Cork, where the epidemic appeared in August 1816, 13 months earlier than in Dublin, as exposed, from its greater intercourse with the Continent, to the action of the new virus. But according to Harty's work, disease had manifested itself at Enniskillen in July; at Edenderry, in the centre of Leinster, in August; at Killala, in a remote corner of Connaught, in September; and in

various parts of the island in the autumn and early winter of the same year.

This wide diffusion of disease is surely not explicable on the supposition of imported contagion; and it might as reasonably be argued, that from the increase of fever in 1815, at Kendal, Leeds, Manchester, Glasgow, the foreign contagion first invaded these towns, and afterwards was transported to Ireland, as that Britain owed the germ of her epidemic to the sister isle. This idea of imported contagion is the old story of the source of Yellow fever in America, which was attributed to West Indian contagion; and at Cuba to the intercourse with the United States.

That famine, or a scarcity of food, had an immediate effect in the production of fever in 1817 is not borne out by facts. The scarcity was attributed to the bad harvest of 1816. This will not account for the increase of fever in 1815, and scarcely for that of the summer and early autumn of 1816; for if it operated at Cork, Edenderry, Killala, &c., how came it to fail in its effects at Dublin, where, in 1816, the number of cases of fever in the hospitals was 1800 less than in 1815? The effects of scarcity were in fact passing away when the epidemic broke out in Dublin in September 1817. A writer in the *Edinb. Med. and Surg. Journal*, vol. xiv. p. 539, gives the prices of wheat and oatmeal from 1808 to 1817, by which it appears "that the price of wheat in England, though above the average in 1817, was lower than in 1810, 1812, and 1813, when no epidemic prevailed, and oatmeal was considerably lower during 1817 and

the 3 preceding years than from 1808 to 1813: and in Scotland, this staple food of the lower classes was lower in 1817 and 1816 than in any of the preceding years; and wheat was also lower in 1815, 1816, and 1817, than in any of the other years." But whatever may be the influence of scarcity or bad quality of food over the production of fever in Great Britain and Ireland among the poor, they can have no concern in the generation of Typhus among the well-fed peasantry of New England.

Nor can want of employment, nor depression of mental and bodily energy apply to them. These causes are almost universally insisted upon by the Irish physicians, and many instances are given of the opposite states apparently preventing or checking the progress of fever. They, as well as deficient nutriment, may predispose to disease through debility, and thus render the body more prone to the operation of the more essential causes of fever. It is well known that sleep exposes those who indulge in it to the worst and most immediate effects of malaria.

Filth, personal uncleanness, crowded, and ill ventilated rooms, are habitual to the poor, especially of cities; and as fever is proverbially the disease of poverty and misery, it would seem to have some connexion with these circumstances. I can only explain their influence through the medium of the effluvia, and the contaminated air to which they give rise, and believe that this local atmosphere of corruption is analogous in its effects to the emanations of the soil, or marsh effluvium;

for filth, and uncleanness, and defective ventilation, are common to poverty everywhere: but the poor of the Madras Government suffered, in the epidemic described by Ainslie, from Intermittent and Remittent fever; and these types are beyond all question the prevalent ones in southern countries, while the Continued is that of more temperate and northern regions. The peasantry of New England are not to be compared in condition with the poor of Britain, and yet they suffer from the same fever infinitely less than the English, and these less than the Irish. The fever in either country is admitted to be spontaneous, whatever may be the difference of opinion as to the causes of its diffusion. In New England, with a scattered population, families living separate in comfortable farm-houses, with gardens, orchards, fields, around each happy abode, with no other defect of ventilation than that which woods or hills may occasion, fever cannot be attributed to the causes which favour its production in the wretched haunts of squalid misery that abound in the cities of Britain and Ireland, and yet the fever is Typhus, the common endemic of this country; and Professor Smith says that it exists in every township on the Connecticut, and its tributary streams, and that Intermittents are unknown. I cannot doubt, therefore, that the cause is malaria, arising from the soil like that productive of Intermittents and Remittents in the marshes of Delaware, and the alluvial banks of the southern rivers. It may be the same cause that produces fever in the haunts of poverty in Britain, and not the effluvia from animal corruption.

Dr. Armstrong believed it was. But are the two sources of disease distinct? Judging from their effects, I should say, probably not; for if marsh effluvium could give rise to Yellow fever at Wilmington, and the putrefaction of animal matter at New London could produce the same disease at the same season in the same year, I should infer a similarity of cause from that of the effects. But admitting the existence, and the influence of malaria over the production of fever, and that it rises from the soil, especially wet soils, it might be asked, what limit can there be to the situations in which it possibly may be evolved? The fever of Britain, therefore, may be owing to it, and not to animal effluvia. But why then should the disease be limited to the haunts of poverty, since all must be more or less exposed to earthy exhalations?

This preference to one class over another would imply the prevalence of the cause or causes among the one, or the greater predisposition to them; and in a city so well drained, for instance, as London, the surface of the earth covered with pavements, &c., the exemption from fever in that class which observes habits of cleanliness, and its frequency in those who are surrounded by filth, and an ill ventilated air, would imply that the neglect of cleanliness was concerned in the creation of disease; and that the emanations from the foul sewers, the filthy yards and privies, the damp cellars, the animal and vegetable refuse, were analogous in kind to those which arise from the surface of the damp soil, replete with organic remains, in the open districts of the country; and the reason why

fever is more frequent and fatal in towns than in the country would thus appear to be twofold, viz. a more concentrated cause, and a more unhealthy class of persons for it to operate upon. In those latitudes where either type of fever is liable to occur, a difference of intensity in the remote and predisposing cause might be supposed to incline to either; that the vigorous peasantry in a diffused malaria in the country would exhibit the periodical type, and the anxious, pale, harassed citizen, from a more concentrated animal effluvium, either the Remittent or the Continued; and where the continued type was the prevalent or the exclusive one, that the same gradation of effect from the mild to the malignant Typhus would be observed.

These views seem to me more rational, and more conformable to facts, than those connected with contagion, which is the least applicable of all the assignable causes of fever, especially in an epidemic. If fever be ever produced spontaneously, that is, without the agency of contagion, why may not the original causes continue to act on others in Continued, as it is admitted that they do in Periodical fever? In the epidemics of the last, where contagion is not generally supposed to act, we find a gradual rise in the amount of disease, and we argue that those first affected were more predisposed to it than those who longer resist the action of the concurring causes. The decided change which takes place in the temperature and the atmosphere of southern latitudes in autumn, checks the progress of fever, or changes its character, and we often find that the ordinary fever

of this country, though less abruptly stopped in its career, is controlled by the cold of winter. If the fact is less decided and less frequent than in climates of more regular order, the explanation perhaps is to be found in the variable character of the seasons of Britain, which are not well defined, and the succession of which has not that sensible effect upon the body. A few degrees of temperature in autumn are perceptibly felt in a climate of a high mean temperature; and after a long permanence of hot weather, drought, and gentle airs, a sudden storm, with northerly winds, may effect a change in arresting the liability to fever, which would be looked for in vain in a variable, damp, chilly climate like Britain. Heat is the predominant characteristic in southern latitudes, as cold is of more northerly ones; and it is perhaps natural to find the fevers of this country extended into or through the winter months, especially when damp, and free from clear and continued frost. We often find the fevers of the south irregular as to the period of their commencement and decline. If early in their general prevalence, by a sort of anticipation in the seasons, they not unfrequently end sooner than usual; and in this country a later development is followed by a continuance of sickness through the winter and spring.

Huxham remarks that some diseases belong peculiarly to certain seasons, because the disposition of the air favours them; as in the spring, Pleurisy, Peripneumony, Angina, and Tertians, and in the autumn Quartans, putrid and malignant fevers, Cholera, and Dysentery. "Atqui si intempestive se

habuerint tempestates, morbi proinde variabuntur maxime, ita ut isti, qui autumnus sunt proprii, per calidum humidumque ver dominari possint."

It is often the case that in this country the winter is but a protracted autumn, without any great or continued change of temperature sufficient to arrest the progress of fever, though the mean temperature may often change its character, giving it a peripneumonic or dysenteric form; and it will be recollected that, on the supposition of its arising from malaria, it may, like the periodical forms of fever, break out at unusual seasons, from the latent cause being called into action by those variations of temperature between autumn and winter, and winter and spring, which apparently gave rise in America to what were called the bilious Pleurisies, evidently of a malarious origin, and the latent products of an antecedent season. Crampton says, in the Epidemic of Dublin, that Dysentery appeared in complication with fever early in the winter of 1817 and 1818, and catarrh and pulmonic attacks in the spring; and the same was generally observed throughout Ireland.

We find these complications associated with every type of fever, and in all countries; and the observations of Buel and Mann with regard to Dysentery, and many other authors from Sydenham, Huxham, Pringle, &c., and the American authors, with relation to bilious Pleurisy, justify the idea, that they are often fever modified by temperature and its vicissitudes, and by predisposition.

Huxham clearly shows that the fevers of his time were often as decidedly arrested by sensible

changes of temperature in the autumn or winter, as those of warmer latitudes; and though he is generally considered as upholding the exclusive doctrine of contagion, I have shown that his opinion is frequently and decidedly in favour of the opposite view. He says, "*Quamquam aliquæ febres epidemicæ a contagione ducant originem, oriuntur atamen plures ab intemperie aëris manifestâ, neque enim probabilis magis videtur communis morbi causa, quam ipse aër omnibus communis. Per humiditas equidem tepidasque atmosphæræ cōstitutiones, permanentes diu, febres lentæ, putridæ, malignæ semper grassantur: nec profecto cessant tales nisi omnino mutata aëris temperatura, quod etiam sæpe supprimit brevi ipsas contagiosas: imo ipsæ pestilentiae ut plurimum occurrit siccum frigus hybernium: frequenter autem nimis, sub humido calidoque cœlo, vim maximam accipit. Atque ego quoque novi sæpius febres putridas, malignas, per æstuosam ac nebulosam atmosphæram, tum vitum numero, auctas maxime, mox tamen sicco flante Boreâ gelidoque, extinctas penitus. Imo ipsæ procellæ sæpe juvant admodum morbida dissipando miasmata.*"

The later observations of Willan, Bateman, Armstrong, &c., prove the truth of these remarks, so far as the general subsidence of the fever in this country in ordinary years by the cold of winter.

If the peripneumonic forms do not present the formidable character which they exhibit in the Southern States of America, it may be said that they harmonize in this respect with the general milder character of the fever of the country, and

that their less precipitant career is in accordance with the lower degree of irritability observed in the natives of temperate as compared with those of hot climates.

Huxham, however, describes a *Peripneumonia* in the winter of 1745 and 1746 (following a malignant fever), which in its character resembled that of America: "After a second, and sometimes after a single bleeding, the pulse and strength sunk to a surprising degree, and it ran into a sort of nervous fever, with great tremors, subsultus, profuse sweats, or an atrabilious diarrhoea, with a black tongue, coma, or delirium."

The facts which are brought forward to establish the evidence of contagion in the Epidemec of 1817 are at least equivocal. Harty enumerates them as follows.

"The fever is chiefly prevalent among the poor; and when one in a family is affected by it, it spreads to other members, while this communication is checked, either by removal to an hospital, or by ventilation and cleanliness. The charitable, and medical and clerical men, and nurses, take fever by intercourse with the poor; 40 medical men took it in Munster, and 13 clergymen died in the county of Kerry: in the hospitals of the House of Industry, among 170 persons who attended on the sick there were 198 cases of fever in 18 months, some having the fever 3 or 4 times: in the Cork Street Hospital 13 out of 47 took the disease in 8 months; and in Steevens' Hospital all the attendants but two took it, exhibiting relapses and fresh attacks. Preventive measures give a positive

or comparative immunity to persons, families, and towns. In some houses the fever remains for months, or even years."

It is evident that this last argument is in favour of a local cause, more enduring than the perishable matter of contagion; and that if the mere occurrence of disease, independent of all other causes of fever, could infect the walls, floor, and furniture of a house, so as to keep up for years the germ of contagion, the general subsidence of an epidemic would appear inexplicable. It is notorious that in countries where periodical fever exists, there are particular localities obnoxious to it, from the presence of the disease-producing principle; and the attachment of Typhus to particular houses or districts rather implies the presence of its spontaneous cause, than of a contagion *sui generis*, adhering to fomites. Sir Thomas Moriaty says, "The epidemic commenced at Roscommon at the end of February 1817, that there were no hospitals or places of reception for persons labouring under fever in that part of the country, and that no public measures were adopted to arrest contagion;" and yet the epidemic declined there as in places where preventive measures were resorted to. If contagion proceeded from fever, and infected the houses, clothes, furniture of the sick, constituting so many latent germs of disease, retaining their powers of vitality for years, and susceptible of multiplying themselves indefinitely, there would be no end to the existence of fever in the neglected haunts of poverty, and no security in the upper classes of society against the invasion of an enemy

so subtle and irresistible ; and Typhus, like Small Pox, would inevitably pervade all ranks. As this is not the case, it has been contended that the contagious principle operates only in close confined air, and in a state of consequent concentration ; and hence those who visit the sick are often seized with fever. But as it is admitted that the sick fell into fever spontaneously, and that successive attacks in a family do not necessarily imply the propagation of contagion from the first to the last, but merely the successive impressions of a yielding to a common cause, it is reasonable to infer that visitors going into the noxious atmosphere equally fall under its influence, just as those who resort to Paris from the country sicken under the effluvium of the city, within a short time after their exposure to it. The circumstance of the attendants of the sick taking the disease proportionately more frequently than others is true, according to Cleghorn, among Intermittents, and hence he infers they are contagious. The anxiety, distress, fatigue, inseparable from the sight of suffering, disease, and death, like other depressing causes, would tend to predispose those who minister to the wants of persons labouring under fever to the action of its remote cause ; and since the disease is disarmed of its contagious power in clean and well-ventilated places, it is a natural inference that it is the combination of circumstances around it in the haunts of poverty, and not the actual disease, which affect those who attend upon it. If animal effluvia, emanating from over-crowded rooms tenanted by persons free from disease, or from ho-

spitals crowded by persons labouring under other diseases than fever, can generate fever, it is surely no conclusive argument that where fever, arising spontaneously in the filthy cabins of the poor, is associated with the other sources of animal effluvia, that contagion operates exclusively in the production of disease among those who visit the sick. The excretions of the fever patient may enter into the common mass of foulness and contamination of air, but without the subtle admixture of a contagious principle *sui generis*, since the evidence of the existence of any such principle is wanting where the closest approximation to, and the most frequent and inevitable contact of, the sick in a pure atmosphere occurs.

As to the efficacy of preventive measures exempting persons, families, and towns from Typhus, I fear little can be said in favour of any but such as contribute to remove the remote cause. That Fever Hospitals can extinguish contagion in an epidemic like that of Ireland, or that 16 or 70 beds in the Fever House of London could contribute to its extinction in London, as Bateman supposes, is ridiculous. The following Table will show this.

LONDON FEVER HOUSE OF RECOVERY.

	Beds.	Cases.	Deaths.	Proportion.	Deaths from Fever, by Bills of Mortality.	Probable amount of Fever in London.
1802.	16	164	13	1 in 12½	2203	27,525
1803.	16	176	17	1 - 10½	2326	24,423
1817.	70	678	50	1 - 13½	1299	17,536

Estimating the deaths in Ireland at 30,000, and the mortality at 1 in 22½, the number of cases would

be 675,000, of which certainly not 150,000 were received into Fever Hospitals, leaving 525,000 persons to spread contagion *ad libitum*. That Fever Hospitals are the most merciful, useful, and essential of all charitable institutions, there cannot be a moment's doubt; and it is a reproach to the metropolis that the House of Recovery is so limited in its extent, and so inadequately supported; but its utility consists in lessening the mortality of fever, and in those measures which are connected with the improvement of the houses and neighbourhood of the poor.

Upon the subject of Malaria, or a fever-producing principle, it is not necessary to say much; but as the evidences of its existence are important, I shall enumerate a few facts connected with it, not limiting myself to any particular country or form of disease. Its effects would seem in some instances to be instantaneous. Lind quotes from Lancisi the fact of 30 persons of the first rank in Rome, upon a party of pleasure towards the mouth of the Tiber, having been immediately seized (with one exception) with a Tertian fever, from the wind suddenly shifting, and blowing from the south over some marshes.

Humboldt says, "When the Yellow fever rages with great violence, the shortest stay at Vera Cruz, or in the atmosphere which surrounds the city, is sufficient to communicate the disease to persons not seasoned to the climate. The inhabitants of the city of Mexico, when they propose to sail for Europe, generally remain at Zalapa till the moment of the departure of the vessel. They set out on

their journey in the night, cross Vera Cruz in a litter, to embark in the boat which awaits them at the mole; and yet these precautions are useless, and it sometimes happens that these very persons are the only passengers who sink under the disease during the first days of the passage. The celerity of the infection is more incontestibly proved by the frequent examples of the better sort of Europeans dying of Yellow fever; though in arriving at the mole they have found litters ready to commence immediately the journey to Perote. These facts appear at a first view in favour of contagion. But how are we to conceive that a malady is communicated at a distance, while at Vera Cruz it is decidedly not contagious by immediate contact. Is it not easier to admit that the atmosphere of Vera Cruz contains putrid emanations, which if breathed for the shortest space of time introduce disorder into all the vital functions? In several individuals the disease only declares itself when they arrive at Zalapa, or on the mountains of La Pileta, 5000 or 6000 feet above the level of the ocean."—(*Political Essay*, vol. iv. p. 175.)

I have mentioned from Dr. Robertson (vol. i. p. 311.) that the men who were employed in boat service in the winter of 1814—1815, at the mouth of the river Apalachicola, were the only ones who suffered from Yellow fever in April and May, when the ship in which they served cruised in the Gulf of Mexico, under a minimum temperature of 80°.

Lind says that the *Phoenix* of 40 guns, in 1766, was perfectly healthy on returning from a voyage to the coast of Guinea till she touched at the island

of St. Thomas in the rainy season. The captain and several officers and men went on shore, where they all died in a few days, except one who returned to England in a bad state of health. The ship lay at anchor 27 days, during which time 3 officers and 6 men remained on shore 12 nights to guard the water-casks, and all died but two. Only those who slept on shore were taken ill, and no other man of the crew was seized with any distemper. The Hound sloop of war, which had made the same voyage, arrived at St. Thomas's before the departure of the Phoenix; and by taking the precaution of having the ship quickly provided with wood and water, without permitting any of the men to remain on shore in the night, she arrived at Spithead in perfect health*.

In August 1758, 27 men were sent ashore on duty at Oristane, in the island of Sardinia, and were seized with fever, and 12 of them, who had slept on the island, were brought on board delirious. All laboured under a low fever, with great oppression at the breast and pit of the stomach, constant retching, and sometimes vomiting of bile, upon which delirium often ensued. The fever changed into double Tertians, and afterwards into obstinate Quartan agues. In the ship, which lay only two miles from the land, none were taken ill but such as had been on shore, and of those 7 died.
—(*Lind*, p. 27.)

During the sickly season at Batavia, a boat belonging to the Medway, which attended on shore

* *Essay on Diseases of Europeans in Hot Climates.* James Lind, M.D. p. 221, &c.

every night, was three times successively manned, not one having survived.—(p. 144.)

Lind says, that a surgeon, who practised some years at Senegal, informed him that during the dry season the country was healthy, but that soon after the rainy season began a low malignant fever constantly spread among the Europeans. Some died soon after the attack, and the corpse was of a yellow colour, stained with livid spots or blotches.—(p. 53.)

Some officers of the Phoenix, shooting at the mouth of the river Gambia, by following their game into a large swamp, were all taken ill immediately with sickness, vomiting, headache, and a constant hawking and spitting, from the disagreeable smell which (as they expressed it) seemed to remain in their mouth and throat: upon returning to the ship a vomit removed their complaints.—(p. 147.)

Mr. Martin, surgeon of a Guinea ship, informed Lind that, when lying in the river Gambia with four other ships, the men in one of them were daily taken ill of fevers and fluxes, and several died delirious, while all the English in the other ships, and in the factories were in perfect health; but on removing that ship about half a league from her first anchorage, which was near some swamps, her men became as healthy as those in the other ships.—(p. 163.)

In the summer and autumn of 1765, when fevers raged at Portsmouth, and in such ships as lay in that harbour near the mud, the men who were in the ships at Spithead enjoyed perfect health.—(p. 160.)

When Yellow fever raged at Cadiz in 1764.

it did not extend to any ship which lay at a distance from the city. An officer and several men from the Tweed, (then at anchor in the bay,) who had been on shore, were seized with the fever, but all those who were sent on board recovered, no bad symptom appearing in their fever, "whilst a disease, similar to the black vomit and Yellow fever, and equally mortal, depopulated the city."—(p. 161).

When a mortal sickness, in 1765, prevailed at Pensacola, by which a regiment newly arrived lost 120 men, and 11 out of 12 of the officers' ladies who were landed with them, the men-of-war lying a mile distant from the shore enjoyed the most perfect health. 'Those men only who had been on shore were seized with the malignant fever, and all of them recovered when they got on board. It was remarkable, that such gentlemen as were seized with the fever at Pensacola, and carried on board ships, quickly recovered, or the fever soon assumed the form of an Intermittent.'—(p. 161.)

Lind (p. 170,) recommends most judiciously "the immediate removal of a person labouring under a violent fever to some distant place, let the symptoms be what they will." "I have had," he says, "the most ample means of ascertaining that persons labouring under fevers and fluxes may be moved with great safety from one place to another: nay, that by a removal of them from bad into a pure air, such patients receive immediate benefit. Of many thousand patients labouring under fevers whom I have visited in Haslar hospital for 25 years, nine-tenths of them were moved from Portsmouth or its harbour; and I am persuaded that many hundreds,

under the most malignant symptoms, have received great benefit by the removal from the foul air of their ships into the pure air of the hospital. The first step to be taken for the preservation of such Europeans as are taken ill on shore, during an epidemic, is to remove them immediately from the original, and perhaps the only source of their sickness, that is, from the land to the sea air. The situation of such a person, while exposed to the influence of the same bad air which produced his sickness, is similar to that of a person in a contagious fever who is constantly exposed to a fresh source of infection. I was once desired to visit an alms-house, in which a low malignant fever prevailed that had proved fatal to several of the poor people. This fever was evidently contagious, and the apothecary, who had treated it in the most approved way, had not been able to stop the progress of the disease, or its mortality. Two or three dead bodies were lying in the same chamber with the sick; and the chambers abounded so much with stench and filth, that I gave it as my opinion, as long as the dirt and nastiness of the place continued, they would prove such a constant source of infection that medicines would have little or no effect. This the apothecary had unsuccessfully represented to the overseers, but his representations were now complied with, and the fever quickly disappeared." —(*Lind*, p. 170—173.)

Jackson ("*Exposition of the Practice of affusing Cold Water in Fever*," p. 398,) recommends gestation in fever as above any other means of relief that art commands; and of course this exercise implies

change of air. In 1778 he suffered from an Intermitting fever, though there was no distinct intermission for 7 days, at Kingsbridge, New York. He was carried 14 miles in a waggon, with such evident accession of strength that he could walk half a mile afterwards. In 1779 he was attacked in Georgia with fever, and his state was most distressing. On the 7th day he was taken in an open cart 25 miles, in heavy rain, to Savannah, and before the end of the journey he considered himself comparatively well. In 1780, 120 men of the 71st regiment, under Remittent fever, were removed in North America in open waggons, exposed to dews at night, scorching sun by day, and occasional showers, and the majority had recovered by the 3rd day, and in the others the obscure Remittent changed to Ague. The benefit could only be ascribed to the motion, change of place and exposure to weather, for they were wretchedly accommodated.

The advantages of gestation were confirmed in infectious fevers in the war of 1793, in England and Holland. One man had been ill some days, and though removed to the regimental hospital he seemed dying, his pulse scarcely perceptible, skin damp and greasy, heat low, countenance sallow and dirty, voice scarcely articulate, swallowing imperfect, fecal and urinary discharges involuntary. The case seemed desperate. He was carried in a blanket to a wheelbarrow, and accommodated with straw and a pillow, and wheeled over the pavement, his face and breast exposed to the cool and fresh air in February. He was almost instantly revived, opened his eyes, drank a glass of wine, ate an orange, spoke clearly, the

pulse expanded, became distinct and regular, skin drier and pleasant to the touch, as if animated by a new diffusion of life and heat. He was wheeled on the pavement for an hour, and from that moment his recovery was speedy and perfect.

In the retreat in Holland, 1794 and 1795, the sick were always benefited by being transported in waggons, even during frost, rains and fogs, for ten hours at a time. Jackson says, the air which stimulates and supports animal life is multiplied in its force by motion in vehicles, for it is applied with increased impulse and rapid succession, while the patient is roused by exercise. He recommends gestation, especially after the 3rd, 5th, 7th days, as stimulating powers act with greatest effect at the moment of febrile remission, or when the fever is languid in its course. It promises, he says, no good in fevers of strong vascular action, with plethora or inflammation; but is useful in those of irregular determination, of congestion in secreting organs. In infectious fevers, which are aggravated by impure air, it is of singular use, and may be used without much previous preparation, as in them susceptibility is rarely lost by a precipitous circulation and inflammation, and because the pure air is so opposite to that in which the patient was so lately placed.

“It is always proof of a bad air, when wounds which are nearly healed break out suddenly afresh; this happens from the unwholesome air of marshes or ditches. At Jamaica an hospital was erected for seamen, which from its grandeur was called Greenwich Hospital. It was unfortunately built near a

marsh, and the effects of this unhealthy situation were that when a patient was sent thither with a mild Intermittent, it was often changed into a malignant fever or bloody flux. The Yellow fever often reigned there, attended with the most profuse evacuations of blood, by vomiting, stools, and even by every pore of the skin, when no such symptoms occurred in patients whose cases had been similar, and who were permitted to remain in their ships. The recoveries were tedious and uncertain, and the least irregularity brought on a relapse. The mortality was so great, and the cause so obvious, that another hospital in a better air was fitted up.”—(*Lind*, p. 178.)

Mills says, in speaking of the poor of Dublin, “who are often crowded in unventilated rooms, it is not very unusual to find one in a family labouring under Typhus, a second under Bilious, and a third under Putrid, Intermittent, Miliary, or Rheumatic fever. Yet all were exposed to the operation of human effluvia. I have seen in Beldoyle, Malahide and Fingal, in several families, and in the individuals of the same family, all these varieties of fever, which apparently originated in the same cause, viz. the vapours from the marshes and pools which infect that district. This fever prevails generally about the close of summer or beginning of autumn, when the sun’s rays call into action the putrid animal and vegetable matter with which these marshes abound: I say animal and vegetable, because it appears to me that the former has a greater power than the latter in the production of fever of every description. As the Continued fever, like the In-

termittent, is produced chiefly by animal effluvia, so the Intermittent shows itself in situations where, from the absence of pool or marsh, no vegetable effluvia could be suspected. At a seminary not far from Dublin, sixty students, from the age of 15 to 30, were attacked, some with Typhoid, some with Bilious, but the majority with Intermittent fever, chiefly of the Quotidian type, and 16 were jaundiced *.

The cause assigned to this fever was the air of crowded and ill-ventilated rooms. Alibert asserts positively that human effluvium is capable of producing pernicious Intermittents, though from its greater virulence, compared with marsh effluvium, it generally gives rise to Continued fever. In speaking of "*les vapeurs élevées du corps de l'homme, et long temps renfermées dans le même lieu,*" he says, "*en effet, presque toujours ces sortes d'exhalaisons ayant un degré d'énergie et de virulence supérieur à celui des miasmes marécageux, les fièvres qui en proviennent se montrent avec un type continu; toutefois cela n'arrive pas d'une manière constante. Ce qu'il y a de positif, c'est que j'ai vu sévir des fièvres pernicieuses Intermittentes dans les hôpitaux qui n'avoient aucun marais dans leur voisinage, et on l'on ne pouvoit soupçonner d'autre infection que celle qui résulte de l'accumulation d'un trop grand nombre d'hommes †.*"

Sir John Pringle mentions that four battalions, of 700 men each, stationed on the islands of Wal-

* Essay on the Utility of Blood-letting in Fever. Thomas Mills, M.D., Dublin, 1816, 2nd edit. p. 214.

† *Traité des Fièvres pernicieuses Intermittentes*, par J. L. Alibert. Paris, 1820, 5me edit. p. 282.

cheren and South Beveland, in the summer of 1747, were so very sickly, that some of the corps had but 100 men fit for duty, and the Royals only four who had not sickened. The squadron which lay at anchor in the channel between the islands was perfectly healthy, neither affected with fever nor flux.

In the memorable expedition of July 1809. to Walcheren, out of 39,113 men of the British army, 3951 died within six months there and at home, and 11,513 were on the sick list in February 1810! Bancroft says 26,846 patients, including relapses, were admitted into the British hospitals in Zeeland previous to November 18th, 1809. The fleet, according to the testimony of Dr. Blane, "stationed in the very narrow channel between Beveland and Walcheren, continued healthy during the whole campaign *." Bancroft affords abundant testimony to the non-contagious character of the fever both in Zeeland and subsequently in England. The fever was Remittent and Intermittent; and "it is observed not to affect the higher orders of inhabitants, nor the officers of the British army, who slept in upper rooms, or in elevated situations; nor the sailors on board ship only a few yards distant from the shore. But among the soldiers whose constitutions were not habituated to marsh effluvia, exposed to fatigue, damp, want of proper accommodation for sleeping, the symptoms appeared with great malignancy. The disease is not contagious in itself, but liable to assume that new form of fever, wherever ventilation is defective, the patients crowded, or where other local causes of impurity

* See Bancroft's Essay on Yellow Fever, &c. pp. 185, 187, 300.

prevail. This was strikingly proved at Flushing, where the accommodations were bad, confined and crowded, the ditches foul and obstructed from the consequences of the siege, and the streets filthy from imperfect police. Some cases of Typhus undoubtedly occurred, owing to the circumstances before mentioned *."

Bancroft has collected many facts illustrative of the local range of malaria (p. 225). In Rome, Baglivi speaks of its acting only in particular spots, the healthy separated from the unhealthy ones only by very short spaces; and Bancroft was told that fever sometimes prevailed there on one side of a street. Berthe asserts the same of Yellow fever at Cadiz in 1800; and Bancroft thinks it highly probable that the miasmata, productive of this disease in the sea-ports of the West Indies and America, arise from the soil immediately around, and, perhaps, *under* the very houses and wharves, where they are imbibed by the persons in whom the fever afterwards appears.

Capt. McKoy, of the 21st regiment, mentions that in July and August 1808, while his own and another company were quartered at Venetico in Sicily, in a barrack nearly 100 feet long, consisting of one ground-story, 40 of the latter company, occupying one half of the barrack, were attacked by a violent malaria fever, which proved fatal to 11, but the disease did not reach a single man of his own company, occupying the other half, though there was no division between the men.

Dr. Hunter, of Jamaica, says that in the barracks

* Edinburgh Med. and Surg. Journ., vol. vi. p. 338.

at Spanish Town, consisting of two stories, the difference in the health of the men on the two floors was so striking as to engage the attention of the Assembly, and it appeared that 3 were taken ill on the ground-floor for 1 on the other.

At St. Anne's barracks, Barbadoes, between July 27th and August 20th, 1805, 278 men of the 15th regiment, lately arrived from England, were attacked by Yellow fever, and 77 died. These men chiefly occupied the barrack which runs towards the sea, nearly at right angles with the officers' barrack, and has low wet ground on each side. The men in the lower floor were taken ill in the ratio of 3 to 1 of those in the upper floor.

Dr. Hunter observes that a longer or shorter period elapses after exposure to malaria before fever is produced. On the watering service in the West Indies, some even fall sick the 1st or 2nd day; others embark in good health, and have been seized 10, 14, or 21 days afterwards. The West Suffolk Militia were called in 1793 from their own county, one of the healthiest in England, to Hulsea barracks, the low marshy unhealthy situation of which is proverbial. The men were at first in perfect health, but became sickly, and 22 died of fever before they left the barracks at the end of June. In July the regiment with 11 other battalions encamped at Waterdown, near Tunbridge Wells, and its sick list soon amounted to 100 out of 500, among which were many with fevers of a bad Remittent kind, some of them fatal, and the deaths in this regiment exceeded those of all the other troops on the same ground. Some of the regiment were taken

ill of the fever in October who had never had it before, that is, nearly 4 months after their removal from the cause at Hilsea.

The 18th regiment, after having been stationed at Hilsea barracks from June 22nd to October 9th, 1788, were then embarked for Gibraltar, where, though the regiment consisted only of 400 men, the number of Agues by the beginning of May was increased to 280, including women and children, of whom a considerable part were then recently attacked for the first time, and whilst no other Agues existed in any other part of the garrison.

Of the troops employed at Walcheren in 1809, many who escaped disease there were attacked by Intermittents after their return to England, and some as late as 6, 7, 8, and 9 months, though care was taken to place them generally in situations remote from all the known sources of marsh miasmata. Bancroft says these facts explain the occurrence of vernal Intermittents, which may be considered as resulting from miasmata received into the body during the preceding summer or autumn, rendered active after its quiescent state by some exciting cause of fever in the spring; and as the effect was not sooner manifested, the dose of miasmata was probably moderate, whence the mildness of vernal Agues.

These facts, taken in connexion with those I have detailed in the body of this work, are sufficient to prove the existence of a local contamination of air operating as a cause of fever; and in proportion as its agency is admitted must the idea of contagion

be abandoned. The length to which this inquiry has led me forbids my offering any additional proof of peculiar states of atmosphere influencing, over large spaces, the simultaneous appearance, the aggravated form, or the general prevalence of fever. I must appeal to the opinions of the great authorities in medicine in support of the idea of this occasional universal cause, and to the facts I have stated in confirmation of it, especially those connected with the epidemic of 1817, throughout a large portion of Europe.

The view I have taken of the influence of mean temperature over the type of fever is borne out by facts in Europe as well as America. It appears to me more philosophical than those generally entertained; but, like all speculations, it must stand or fall by the test of future observation and experience. The changes which have been wrought in the mind of the profession on the subject of Yellow fever and Typhus within the last 20 years, prove that old opinions are becoming modified; for contagion, as an exclusive cause, is abandoned generally in both these diseases. The causes which excite Yellow fever in the West Indies and in the Southern States of America are now well understood; at least its limitation to strangers from a more northern latitude instructs us as to the causes of their prone disposition to this precipitate form of fever, and of the exemption of the natives from its attacks. The fate of Philadelphia in 1793 and subsequent years, compared with that of New York, Boston, and Providence, is perhaps best explained by the difference:

of latitude : and the existence of Typhus as the common endemic in the New England States, to the exclusion of Ague, is like that of Britain, where we lose every trace of periodical fever as a general type. If the fevers of Italy be compared with those of the Middle States of America, and the Typhus of Vermont and Connecticut with that of England, a remarkable agreement in type and character will be found existing in them ; and it is a very instructive circumstance that the same disease is ascertained to prevail among the well-conditioned peasantry of New England and the poor of the cities of Britain, often in situations where Ague abounds in more southern latitudes, and yet this latter form of disease is almost unknown in either country.

I leave the explanation of the subject to abler minds, having offered my own. I should not have ventured into so wide and intricate a field of inquiry, had I not been impelled by the solicitude I felt to offer an exposition of the character of fever in different countries, in giving an account of the life and opinions of Dr. Armstrong. I had hoped the subject would hereafter have been discussed by one who was fully capable of mastering its difficulties, and whose ardent and honest mind gave such promises of usefulness, that, though he lived only to enter the threshold of science, he died enshrined in the respect of some of its brightest ornaments. But it has been ordered otherwise ; and in losing one of the most valued of my friends, I feel also that I have lost much that I promised myself of instruction from his labours, in a subject which has

engrossed much of my attention, and which, from its importance, would have largely occupied his own*.

* The friend alluded to was Dr. James Jackson, jun., of Boston, United States of America, the favourite pupil of Louis, with whom he studied nearly two years, and before whom he exhibited so much talent and research, as to secure him the entire confidence and friendship of that eminent man. Dr. Jackson's observations on Cholera, published by his father, are among the most accurate and instructive of the works on that formidable disease. He died at the age of 24, of Dysentery, on the 27th of March, about seven months after his return from Europe, respected by his professional brethren and loved by all who knew him.

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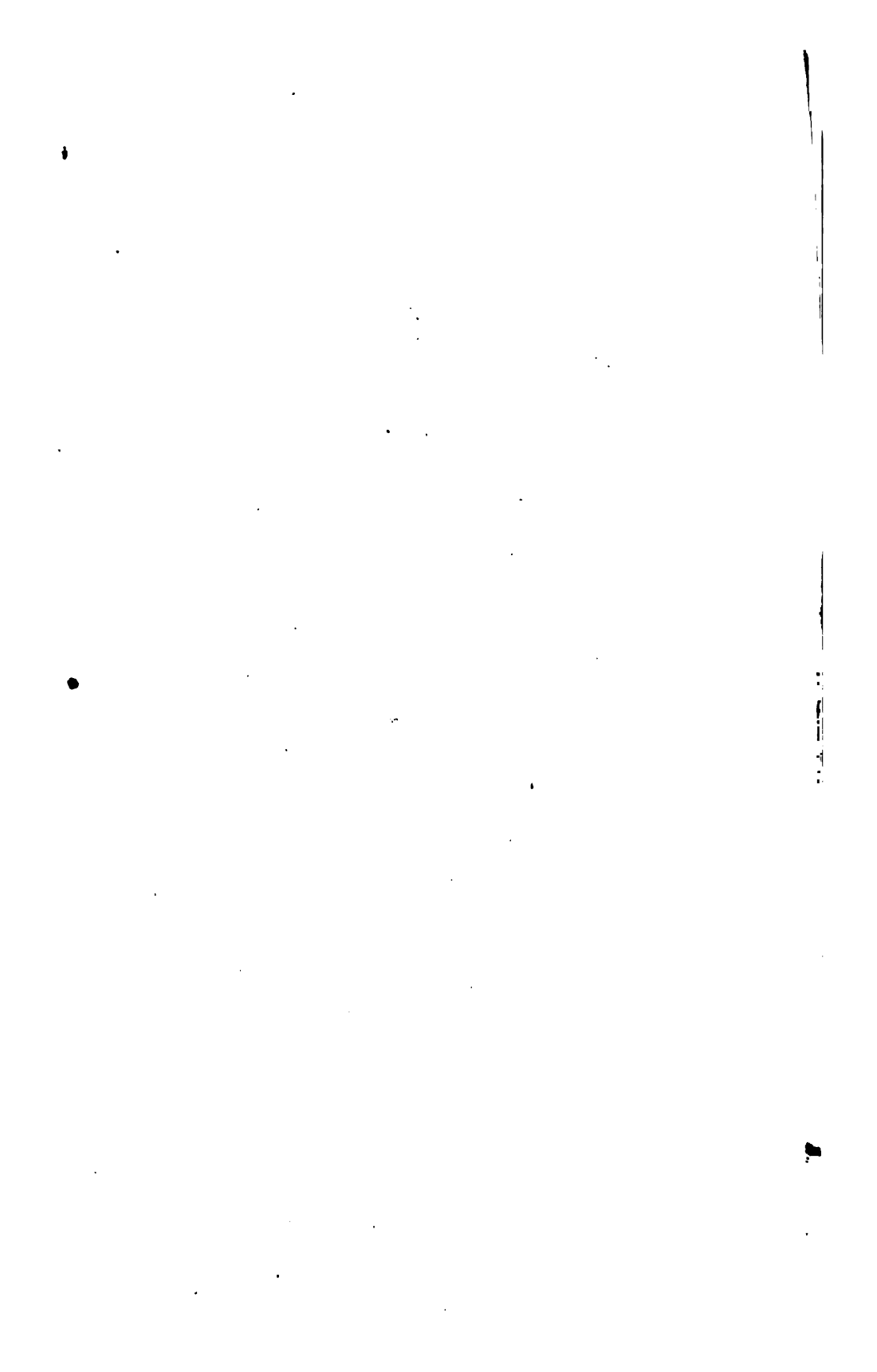
ERRATA.

- Vol. I. page 31, top line, *for are read is*
 — 302, line 4, *after Savannah insert a comma.*
 — 368, *read De Rosset*
 — 393, 394, 477, 478, *for cholic read colic*
 — 460, line 27, *read Mr. Sheppard*
 Vol. II. page 42, line 10, *read constitutiones*
 — 61, top line, *after Plague insert a comma.*
 — 98, line 13 from bottom, *after Damietta insert inserted commas.*
 — 117, last line, *read probably*
 — 130, line 4 from bottom, *read Augsburg*
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 → 214, line 18, *read hincque*
 — 220, line 17, *read maxime*
 — 221, line 3, *read hincque*
 — 221, line 11 from bottom, *read aqualoribus*
 — 224, line 6 from bottom, *read hinc*
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